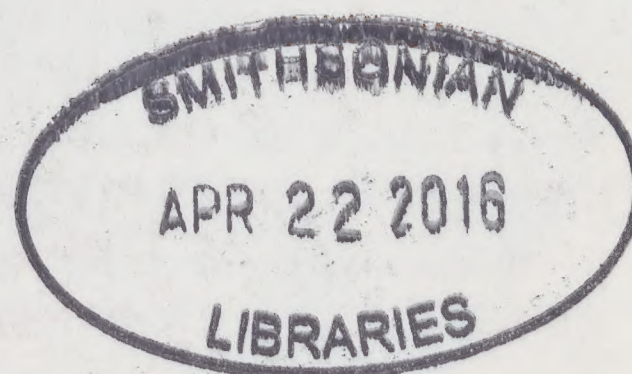


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Cover image: *Nanophyes marmoratus* (Goeze, 1777), known as the purple loosestrife weevil, illustrated by Mark Russell (published with his kind permission). The genus *Nanophyes* and its type species *Nanophyes marmoratus* were placed on the Official Lists of Generic and Specific Names in Zoology by rulings in Opinion 1526 (BZN 46: 67–68). The purple loosestrife weevil is an important biocontrol agent against the European weed *Lythrum salicaria* L. in North America and an exceedingly diverse species in colour pattern.

BULLETIN OF ZOOLOGICAL NOMENCLATURE

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Notices

(1) Applications and correspondence relating to applications to the Commission should be sent to the ICZN at the address given on the inside of the front cover and on the Commission website. English is the official language of the *Bulletin*. Please take careful note of instructions to authors (present in a one or two page form in each volume and available online (at <http://iczn.org/content/guidelines-case-preparation>) as incorrectly formatted applications will be returned to authors for revision. The Commission's Secretariat will, where possible, answer general nomenclatural (as opposed to purely taxonomic) enquiries and assist with the formulation of applications and, as far as it can, check the main nomenclatural references in applications. Correspondence should preferably be sent by e-mail to iczn@nus.edu.sg.

(2) The Commission votes on applications eight months after they have been published, although this period is normally extended to enable comments to be submitted. Comments for publication relating to applications (either in support or against, or offering alternative solutions) should be submitted as soon as possible. Comments may be edited (see instructions for submission of comments at <http://iczn.org/content/instructions-comments>).

(3) Requests for help and advice on the Code can be made direct to the Commission and other interested parties via the Internet. Membership of the Commission's Discussion List is free of charge. You can subscribe and find out more about the list at <http://list.afriherp.org/mailman/listinfo/iczn-list>.

(4) The Commission also welcomes the submission of general-interest articles on nomenclatural themes or nomenclatural notes on particular issues. These may deal with taxonomy, but should be mainly nomenclatural in content. Articles and notes should be sent to iczn@nus.edu.sg.

New applications to the Commission

The following new applications have been received since the last issue of the *Bulletin* (volume 72, part 4, 20 December 2015) went to press. Under Article 82 of the Code, the prevailing usage of names in the applications is to be maintained until the Commission's rulings on the applications (the Opinions) have been published.

CASE 3708: *Elosuchus cherifiensis* (Lavocat, 1955) (Crocodyliformes, Tethysuchia): proposed replacement of a lectotype by a new lectotype. L.-M. Meunier & H.C.E. Larsson.

CASE 3709: Names of nine western North American *Hesperia comma*-group subspecies (Lepidoptera, HESPERIIDAE): proposed conservation through designation of neotypes for *Pamphila colorado* Scudder, 1874, *Hesperia colorado ochracea* Lindsey, 1941, *Pamphila manitoba* Scudder, 1874, *Pamphila idaho* Edwards, 1883, *Pamphila oregonia* Edwards, 1883, *Pamphila cabelus* Edwards, 1881, and *Pamphila harpalus* Edwards, 1881. J.A. Scott, N.G. Kondla, J.F. Emmel, K.E. Davenport, S.O. Mattoon, C.S. Guppy, W.D. Patterson, S. Kohler, M.S. Fisher, P.A. Opler, A.R. Westwood & R.A. Royer.

Changes in the Commission membership

The President has approved announcement of these changes to the membership of the Commission.

In December 2015, a meeting of the ICZN was held in Berlin in conjunction with the International Union of Biological Sciences. At this meeting, major changes took place affecting the membership of the ICZN.

The ICZN gratefully acknowledges the many years of service of the five retiring Commissioners:

- D. G. Fautin (U.S.A.; Cnidaria) (Vice-President, ICZN)
- P. Bouchet (France; Mollusca) (Councillor, ICZN)
- D. J. Brothers (South Africa; Hymenoptera)
- D. J. Patterson (U.S.A.; Protista)
- P. Štys (Czech Republic; Heteroptera)

The ICZN warmly welcomes the seven newly-elected Commissioners:

- E. Aesch (Austria; Protozoa)
- P. Bouchard (Canada; Coleoptera)
- T. Bourgoin (France; Hemiptera)
- D. Dmitriev (U.S.A.; Hemiptera)
- N. Evenhuis (U.S.A.; Diptera)
- F. Rheindt (Singapore; Aves)
- F. Welter-Schultes (Germany; Mollusca)

ANNOUNCEMENTS

New President and Vice-President

Both President Dr Jan van Tol and Vice-President Professor Daphne Fautin had expressed their intention to resign, and elections of Officers were organised by the Secretariat (*London and Singapore*) during the month of February. A nomination Committee was formed consisting of the Council members plus Commissioners Dr Alberto Ballerio and Professor Peter Ng. After the one month voting period, votes were counted by Secretary Mr Martyn Low and Scientific Editor Dr Svetlana Nikolaeva. The results were confirmed by Commissioners Ballerio and Ng, and presented to President van Tol, who informed the Commission.

Dr Thomas Pape (*Copenhagen*) was elected as President, and Dr Mark Harvey (*Perth*) as Vice-President. We congratulate both Commissioners on their elections, and wish them wisdom and success in these challenging times for zoological nomenclature. Dr Pape took over the responsibilities as President during a meeting in London on 16 March 2016. Since Professor Fautin resigned last December, Dr Harvey effectively took office on 2 March 2016.

Secretariat of ICZN: London office closed by 1 April 2016

After the dissolution of the Trust for Zoological Nomenclature, the London office was supported by the Natural History Museum and the income from subscriptions of the *Bulletin*. The Natural History Museum will be discontinuing their support as from the end of March 2016, which has necessitated the following measures. First, the contract of Dr Svetlana Nikolaeva with the Natural History Museum has been terminated by 1 April 2016. The Commission has insufficient funding to continue the contract. We very much regret that Dr Nikolaeva cannot continue her task as Scientific Editor of the *Bulletin*, which actually involves all tasks related to handling Cases submitted to the Commission. Second, the ICZN archives, library and stock of the *Bulletin* and books, now in London, will be moved to the Secretariat in Singapore. Third, the *Bulletin of Zoological Nomenclature* will no longer be published in print after 2016. Subscribers will be informed of new subscriptions later this year. Fourth, all tasks involving Cases will now be handled by Secretary Mr Martyn Low in Singapore. The new Council will define new procedures for the administration later this year. This will be announced on the ICZN website.

Finally, on behalf of the Commission we wish to thank Sir Michael Dixon, Director of the Natural History Museum, London, for the many years of support provided to the ICZN. We are extremely grateful to Dr Svetlana Nikolaeva and Mr Steve Tracey, who have ably served the Commission for many years. The Commission, aided by the Secretariat, has instigated a number of important changes over the past ten years. These include the implementation of ZooBank as the official registry of zoological nomenclature, and changes to the *Code* allowing electronic publications to contain available nomenclatural acts. These major achievements will allow the Commission to move with confidence into the future.

On behalf of ICZN Council
Dr. Jan van Tol, Outgoing President

Case 3702***Verconella dilatata* var. *cuvieriana* Powell, 1927 (currently *Penion cuvierianus*; Mollusca, Gastropoda, BUCCINOIDEA): proposed conservation of the specific name**

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Abstract. The purpose of this application, under Article 23.9.3, is to conserve the well-known specific name *Penion cuvierianus* (Powell, 1927) for a common species of marine gastropod from New Zealand. The name is threatened by the senior subjective synonym *Verconella rex* Finlay, 1926, which has almost never been mentioned since its first publication. Precedence of the name *Penion cuvierianus* is proposed to maintain stability of nomenclature.

Keywords. Nomenclature; taxonomy; Mollusca; Gastropoda; BUCCINIDAE; *Verconella*; *Penion*; *Verconella cuvieriana*; *Verconella rex*; New Zealand.

1. Finlay (1926, p. 412, figs. 71, 72) described *Verconella dilatata rex*, based on a specimen from 73 m depth off Whakatane, New Zealand (holotype MA70830 in the Auckland Museum).

2. Powell (1927, p. 553, figs. 13, 14) described *Verconella dilatata* var. *cuvieriana*, based on a specimen from 70–73 m depth off Whakatane, New Zealand (holotype Auckland Museum MA71265).

3. The species currently known universally as *Penion cuvierianus* is common off the northern North Island of New Zealand, living at 37–400 m depth. It was long identified as *Fusus dilatatus* Quoy & Gaimard, 1833 and, for a time, *Siphonalia maxima* Tryon, 1881, until Ponder (1975, fig. 1) showed that the lectotype (Fischer-Piette & Beigbeder, 1944, p. 73, ‘holotype’) of *F. dilatatus* is actually a form of the other common New Zealand shallow-water species, now known as *P. sulcatus* (Lamarck, 1816).

4. Ponder (1975) selected *Verconella dilatata* var. *cuvieriana* Powell, 1927 in preference to *V. dilatata* var. *rotunda* Powell, 1927 as the next available name for *Penion dilatatus* of authors, not Quoy & Gaimard, overlooking *Verconella dilatata rex* Finlay, 1926, which is conspecific with *V. dilatata* var. *cuvieriana*, and was introduced in the same volume (vol. 57) of the *Transactions of the New Zealand Institute* (title page dated 10 March 1927).

5. A declaration printed at the top of the first page of Finlay’s article states that it was ‘issued separately 23 December 1926’ (Finlay, 1926, p. 320; Beu et al., 1969), prior to Powell’s article (which bears the statement ‘issued separately 8 February 1927’). In an attempt to reconcile priority of names introduced by R.S. Allan and H.J. Finlay in volume 57, a submission was made to the International Commission for confirmation of 23 December 1926 as the date of publication of Finlay’s article (Beu et al., 1969), but this was never ruled upon by the Commission. For several decades thereafter, local authors accepted 10 March 1927 as the date of publication of all articles in volume 57, until Beu & Maxwell (1990, p. 15) advocated acceptance of 23 December 1926 for Finlay’s article. This has been accepted as the date of publication in recent years by all New Zealand authors and others aware of the situation. Finlay’s taxon *Verconella dilatata rex* clearly has priority over Powell’s taxon *V. dilatata cuvieriana*.

6. Apart from a listing of the holotype in a catalogue of type specimens (Powell, 1941, p. 257), the name *Verconella dilatata rex* was omitted from all authoritative checklists of the New Zealand molluscan fauna (Powell, 1937, 1946, 1957, 1962) and a review of the genus (Powell, 1947), until finally listed in the synonymy of *Penion dilatatus dilatatus* (Powell, 1976, p. 101; 1979, pp. 200, 500), i.e. *P. cuvierianus*. Otherwise *V. rex* has been mentioned only once (Finlay, 1930, p. 72) since the original description, as a species in comparative remarks about a congener. Since the conditions of Article 23.9.1.1 are not met, prevailing usage cannot be maintained through simple reversal of precedence.

7. The binomen *Penion cuvierianus* has been accepted universally as the valid name for the species, following Ponder’s (1975) article, including by Powell (1979, p. 500), who referred to it in an addendum. A list of 20 additional examples of usage is submitted to the Commission Secretariat. Both common shallow-water species of *Penion* in New Zealand have undergone many changes of name during the last 100 years; the name of the other common species, *P. sulcatus*, has also been accepted for only a similarly short period. Both names, *P. sulcatus* and *P. cuvierianus*, have stabilised only relatively recently after a long series of confusing changes. To change one of them again now would be particularly upsetting for stability of nomenclature. The name *P. cuvierianus* was adopted immediately in 1975 and has been accepted in New Zealand as the valid name for this common species, in voluminous ‘grey literature’ as well as the formal usages (a list of usages is submitted to the Commission Secretariat), so we consider that reversal of precedence and acceptance of *Penion cuvierianus* as the valid name for this species is

important to promote stability of nomenclature. *Verconella rex* is literally a forgotten name whose introduction would cause great confusion.

8. The International Commission on Zoological Nomenclature is accordingly asked:

- (1) to use its plenary power to give the specific name *cuvieriana* Powell, 1927, as published in the trinomen *Verconella dilatata cuvieriana*, precedence over the species name *rex* Finlay, 1926, as published in the trinomen *Verconella dilatata rex*, whenever these are considered synonyms;
- (2) to place on the Official List of Specific Names in Zoology the following names:
 - (a) *cuvieriana* Powell, 1927, as published in the trinomen *Verconella dilatata cuvieriana*, with the endorsement that it is to be given precedence over *Verconella dilatata rex* Finlay, 1926 whenever the two are considered to be synonymous;
 - (b) *rex* Finlay, 1926, as published in the trinomen *Verconella dilatata rex*, with the endorsement that it is not to be given priority over the name *Verconella dilatata cuvieriana* whenever the two are considered to be synonymous.

Acknowledgements

Thanks to Wilma Blom (*Auckland War Memorial Museum*) for registration numbers, and Virginie Héros (*Muséum National d'Histoire Naturelle, Paris*) for information on the type material of *Fusus dilatatus*.

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Acknowledgement of receipt of this application was published in BZN 72: 267.

Comments on this case are invited for publication (subject to editing) in the *Bulletin*; they should be sent to I.C.Z.N., Natural History Museum, Cromwell Road, London SW7 5BD, U.K. (e-mail: iczn@nhm.ac.uk).

Case 3704***Lepisma* Linnaeus, 1758 (Insecta, Zygentoma, LEPISMATIDAE): proposed reversal of Direction 71 (1957) regarding the gender of the name**

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Abstract. The purpose of this application, under Articles 78.1, 78.2.3 and 80.2 of the Code, is to resolve an ongoing issue involving the gender of the name of the silverfish genus *Lepisma* Linnaeus, 1758 and other generic names derived from *Lepisma*. Under Direction 71 issued by the Commission in 1957, *Lepisma* is deemed to be of feminine gender despite being etymologically neuter. Unfortunately, Direction 71 did not explicitly advise on the treatment of genus-group names derived from *Lepisma*, all of which are neuter under Article 30.1.2 of the Code but nonetheless have generally been treated as feminine. Under Article 29.5 of the Code, prevailing use of the family name LEPISMATIDAE so spelled is not affected by the generic-level gender problem, but the scope of the gender-related confusion extends to almost half of the generic and specific names in the family LEPISMATIDAE Latreille, 1802, including such cosmopolitan peridomestic pests as *Lepisma saccharina* Linnaeus, 1758 and *Ctenolepisma longicaudata* Escherich, 1905. Three possible resolutions are proposed: that the Commission confirm that Direction 71 stands and the gender of *Lepisma* is feminine and also either (1) confirm that under Article 30.1.2 of the Code all generic names derived from *Lepisma* are of neuter gender,

thereby filling the gap in Direction 71, or (2) rule under the plenary power that all generic names derived from *Lepisma* are of feminine gender, thereby endorsing current usage; or (3) that the Commission use their plenary power to rescind Direction 71 such that *Lepisma* assumes its etymologically correct neuter gender, while also confirming that under Article 30.1.2 of the Code all genera with names derived from *Lepisma* are of neuter, not feminine, gender. Reasons are given for preferring the third option, despite the resulting need to emend at least 129 species-group names in the genera involved.

Keywords. Nomenclature; taxonomy; gender; Insecta; Zygentoma; Thysanura; LEPISMATIDAE; *Afrolepisma*; *Anisolepisma*; *Asiolepisma*; *Burmalepisma*; *Cretalepisma*; *Ctenolepisma*; *Gopislepisma*; *Hemilepisma*; *Heterolepisma*; *Hyperlepisma*; *Lepisma*; *Leucolepisma*; *Mirolepisma*; *Nebkhalepisma*; *Neoasterolepisma*; *Ornatilepisma*; *Panlepisma*; *Protolepisma*; *Tricholepisma*; *Psammolepisma*; *Sabulepisma*; *Sceletolepisma*; *Swalepisma*; *Xenolepisma*; *saccharina*; *longicaudata*; silverfish.

1. Linnaeus (1758, p. 608) described the first species of silverfish, giving it the name *Lepisma saccharina* Linnaeus, 1758. He treated the name *Lepisma* Linnaeus, 1758 as if it were feminine, although it is of Greek origin (meaning scaled) and neuter gender. Gmelin (1790, p. 2906) was the first to treat the genus as grammatically neuter when he referred to the species as *Lepisma saccharinum*, but most subsequent authors continued to treat *Lepisma* as feminine. It was placed on the Official List of Generic Names in Zoology by the ruling given in Opinion 104 (p. 27) (Smithsonian Miscellaneous Collections 73(5): 25–28, 19 September 1928; see also Opinions and Declarations 1B: 393–396, 30 September 1958), but with no gender specified. The Official List entry was emended by a ruling in Direction 63 (p. 25) to record the method by which the type species of the genus was determined) (Opinions and Declarations 1E: 21–60, 21 June 1957). The name *saccharina* was placed on the Official List of Specific Names in Zoology as Name 1289 by a ruling in Direction 64 (Opinions and Declarations 1E: 61–74, 21 June 1957).

2. A further 22 genera and one subgenus have since been erected with names derived from *Lepisma*, the larger ones being *Ctenolepisma* Escherich, 1905 (p. 75), *Heterolepisma* Escherich, 1905 (p. 63) and *Neoasterolepisma* Mendes, 1988 (p. 13). Under Article 30.1.2 of the current edition of the Code, ‘a genus-group name that is or ends in a Greek word transliterated into Latin without other changes takes the gender given for that word in standard Greek dictionaries’. Accordingly, all genus-group names ending in *-lepisma* should be treated as of neuter, not feminine, gender.

3. This gender issue has also played a role in disputes over the valid spelling of the family name, which was initially proposed by Latreille (1802, p. 70) as *Lepismenae*. Leach (1815, p. 76) later referred to the family as *Lepismida*, Billberg (1820, p. 124) called it *Lepismaedes* at the rank of ‘Natio’ (the single rank he placed between the ‘Legio’ Thysanura and genus *Lepisma* and therefore equivalent to family), and Wiegmann & Ruthe (1832, p. 475) used the name LEPISMIDAE. All of these names were formed by placing various endings on the stem ‘Lepism-’, which may imply an understanding of the name of the type genus as feminine on the part of these authors. Burmeister (1838, pp. 444, 453) was the first to suggest a family name, LEPISMATIDAE, with a stem ‘Lepismat-’ that matches the etymologically neuter gender of *Lepisma*. Grassi (1888, p. 582) reverted

to a spelling based on the former stem, i.e. LEPISMIDAE. Escherich (1905, p. 35), in the first monograph on the silverfish, used the neuter-compatible spelling LEPISMATIDAE. This spelling seems to have been used by all authors since Escherich and is therefore considered to be in prevailing use. Under Article 29.5 of the Code, LEPISMATIDAE will, therefore, remain unchanged irrespective of any decision concerning the gender of its type genus *Lepisma*.

4. Hemming (1955, pp. 299–300), in his capacity of Secretary of the Commission, prepared an application for consideration by the Commission (see also pp. 153–154 in Direction 71: Opinions and Declarations 1E: 151–160, 24 July 1957) in which he drew attention to the difficulties that had arisen in assigning a gender to *Lepisma*. He proposed the use of the plenary power to prescribe for this name a gender in harmony with accepted usage, i.e. as feminine (see Direction 71). Two written opinions (Clay, 1955, p. 300; Delany, 1955, p. 300) in support of this proposal were published along with Hemming (1955), and two additional opinions in support were received later and published in Direction 71.

5. Paclt submitted an argument against the proposal, also published in Direction 71 (pp. 157–158), noting his own extensive use of *Lepisma* in the neuter gender in a published monograph (i.e. Paclt, 1956) and in a review ‘soon to be published’. He listed six authors, none of whom were significant contributors to *Zygentoma* systematics, to show that acceptance of the feminine form was by no means universal. He also raised the issue of the many genera with names derived from *Lepisma*, such as *Heterolepisma* and *Ctenolepisma*, noting (Direction 71, p. 158) that ‘some Russian authors are familiar with the correct gender of *Lepisma*’.

6. The Commission ruled in favour of treating the name *Lepisma* as being of feminine gender by a vote of 23 to two. This decision was published in Direction 71 (pp. 158–160), but the question of the treatment of the gender of derivative names was apparently not considered. The term ‘Direction’ is not used in the present Code except in the Code’s Glossary, where it is defined as a statement ‘giving the result of a vote completing or correcting a ruling given in an Opinion’. In the present Case, Direction 71 completed the ruling about *Lepisma* in Opinion 104, which did not specify any gender for this name. The Glossary goes on to note that ‘Directions have been replaced by Official Corrections’.

7. Paclt (1967, p. 16) finally published his review of the family and effectively ignored Direction 71, using the name *Lepisma* in the neuter gender. The names of all affected species, including those of genera with *Lepisma*-derived names, were emended in this work to the neuter gender. He introduced the name *Hemilepisma* (Paclt, 1967, p. 34). Kaplin (1993, p. 34) also adopted the neuter gender in his paper, which included a comprehensive (but not widely adopted) revision of the large genus *Ctenolepisma*. Meanwhile, the other contributors to silverfish systematics (Molero-Baltanás et al., 1994, p. 104; Smith, 2015 p. 27) continued to describe new species using the feminine gender for species belonging to the genus *Lepisma* and, incorrectly, also for species belonging to genera with names derived from *Lepisma* (e.g. Wygodzinsky, 1959, p. 35; Irish, 1987, p. 159; Mendes, 1988, p. 112; Molero-Baltanás et al., 1995 p. 354, Smith, 2013, p. 232).

8. Of the 298 species names currently included in the family LEPISMATIDAE, some 238 names are included in genera affected by the *Lepisma* gender question (the full list of names is submitted to the Commission Secretariat). The names of at least two species, *Lepisma saccharina* and *Ctenolepisma longicaudata* Escherich, 1905 (p. 83), are well

established in the non-specialist literature but have appeared in both neuter and feminine forms. One of the authors of this proposal (Smith) is preparing to submit a catalogue of the world *Zygentoma* fauna for publication as part of his Ph.D. project. It is therefore hoped that the Commission can resolve this issue before the submission of this document for publication. Although the ruling in Direction 71 was obtained through use of the plenary power, as is evident in the title of Direction 71, it is not absolutely clear whether the plenary power must be invoked to reverse such a ruling. If Direction 71 is considered an 'error' that is to be fixed by negating the Direction, then Article 80.4 of the Code says 'the Commission shall reconsider the matter and publish a further Opinion'. The manner of reconsideration is not specified there in detail, but by reference to the previous sentence in Article 80.4, it must involve a further vote. To be sure of resolving the current matter conclusively, we ask that any reversal of Direction 71 by the Commission be done by invoking the plenary power.

9. Three routes of resolution are possible.

- (a) Maintaining the gender of *Lepisma* as feminine as mandated by the previous ruling of the Commission, Direction 71, while requiring all generic names derived from *Lepisma* (which were not covered by that Direction) to be treated as neuter in accordance with Article 30.1.2, in spite of the more extensive but incorrect use of the feminine gender. This option only requires the use of the Commission's specific powers under Article 78.2.3 of the Code, to explain how to apply the rules that are currently in force. Its consequence would be that the commonly used name *Lepisma saccharina* would not change but that *Ctenolepisma longicaudata* would change to *Ct. longicaudatum*. In total, 126 species names would need to be corrected in this way.
- (b) Maintaining the gender of *Lepisma* as feminine as mandated by the previous ruling of the Commission, Opinion 71, as in option a) above, while invoking the plenary power (Article 78.1 of the Code) to require that all generic names derived from *Lepisma* also be treated as feminine, in conformance with the most extensive current usage. The commonly used names *L. saccharina* and *Ct. longicaudata* would not change in consequence, nor would the names of most of the recently described species; just nine species names would need to be emended. However, this decision would deviate the farthest from the intent of the Code and would result in the largest deviation from the spellings used by Paclt (1967) in the most recent catalogue of the family.
- (c) Our preferred option would be to return to the etymologically correct gender allocation of *Lepisma* by invoking the plenary power (Article 78.1 of the Code) to overturn Opinion 71 and rule that *Lepisma* is of neuter gender and by also invoking the specific powers under Article 78.2.3 of the Code to require that all generic names derived from *Lepisma* be treated as neuter in accordance with Article 30.1.2. This would be in accordance with Paclt (1967) but contrary to the usage of most other *Zygentoma* specialists, including us. The commonly used names *L. saccharina* and *Ct. longicaudata* would both need to change, along with 129 other species names (this number excludes 18 names currently considered to be species inquirenda). Although this would require the largest number of species names to be emended of any of the three options, it would result in usage aligned with both the original intent of the Code and the most recent catalogue for the family.

10. The International Commission on Zoological Nomenclature is accordingly asked:

Set A (preferred option):

- (1) to use its plenary power to overturn Direction 71 and rule that *Lepisma* is of neuter gender;
- (2) to emend the entry for *Lepisma* Linnaeus, 1758 on the Official List of Generic Names in Zoology to indicate that its gender is neuter, as ruled in (1) above;
- (3) to use its specific powers under of the Code to require that all generic names derived from *Lepisma* be treated as neuter in accordance with Article 30.1.2;
- (4) to place on the Official List of Generic Names in Zoology the following names (gender: neuter as ruled in (1) above):
 - (a) *Afrolepisma* Mendes, 1981 (gender: neuter), type species *Lepisma traegardhi* Silvestri, 1913 by original designation;
 - (b) *Anisolepisma* Paclt, 1967 (gender: neuter), type species *Heterolepisma hartmeyeri* Silvestri, 1908 by original designation;
 - (c) *Asiolepisma* Kaplin, 1989 (gender: neuter), type species *Asiolepisma aellae* Kaplin, 1989 by original designation;
 - (d) *Burmalepisma* Mendes and Poinar, 2008 (gender: neuter), type species *Burmalepisma cretacicum* Mendes & Poinar, 2008 by original designation;
 - (e) *Cretalepisma* Mendes & Wunderlich, 2013 (gender: neuter), type species *Cretalepisma kachinicum* Mendes & Wunderlich, 2013 by original designation;
 - (f) *Ctenolepisma* Escherich, 1905 (gender: neuter), type species *Lepisma lineata* Fabricius, 1775 by subsequent designation by Paclt, 1967 (p. 38);
 - (g) *Gopsilepisma* Irish, 1989 (gender: neuter), type species *Gopsilepisma veracunda* Irish, 1989 by original designation;
 - (h) *Hemilepisma* Paclt, 1967 (gender: neuter), type species *Braunsiella heymonsi* Escherich, 1905 by original designation;
 - (i) *Heterolepisma* Escherich, 1905 (gender: neuter), type species *Lepisma pampeana* Silvestri, 1902 by subsequent designation by Paclt, 1967;
 - (j) *Hyperlepisma* Silvestri, 1932 (gender: neuter), type species *Hyperlepisma patrizii* Silvestri, 1932 by original designation;
 - (k) *Leucolepisma* Wall, 1954 (gender: neuter), type species *Leucolepisma arenaria* Wall, 1954 by original designation;
 - (l) *Mirolepisma* Silvestri, 1938 (gender: neuter), type species *Mirolepisma deserticola* Silvestri, 1938 by original designation;
 - (m) *Nebkhalepisma* Irish, 1988 (gender: neuter), type species *Hyperlepisma australis* Wygodzinsky, 1960 by original designation;
 - (n) *Neoasterolepisma* Mendes, 1988 (gender: neuter), type species *Lepisma foreli* Moniez, 1894 by original designation;
 - (o) *Ornatilepisma* Irish, 1988 (gender: neuter), type species *Ornatilepisma horni* Irish, 1988 by original designation;
 - (p) *Panlepisma* Silvestri, 1940 (gender: neuter), type species *Panelpisma argentina* Silvestri, 1940 by original designation;
 - (q) *Protolepisma* Mendes & Poinar, 2013 (gender: neuter), type species *P. tainicum* Mendes & Poinar, 2013 by original designation;
 - (r) *Psammolepisma* Irish, 1988 (gender: neuter), type species *Ctenolepisma schultzei* Silvestri, 1908 by original designation;

- (s) *Sabulepsisma* Irish, 1988 in Irish & Mendes, 1988 (gender: neuter), type species *Sabulepsisma multiformis* Irish, 1988 in Irish & Mendes, 1988 by original designation;
- (t) *Sceletolepsisma* Wygodzinsky, 1955 (gender: neuter), type species *Ctenolepsisma* (*Sceletolepsisma*) *arenicola* Wygodzinsky, 1955 by original designation;
- (u) *Swalepsisma* Irish, 1988 in Irish & Mendes, 1988 (gender: neuter), type species *Swalepsisma mirabilis* Irish, 1988 in Irish & Mendes, 1988 by original designation;
- (v) *Tricholepsisma* Paclt, 1967 (gender: neuter), type species *Lepisma aurea* Dufour, 1831 by original designation;
- (w) *Xenolepsisma* Mendes, 1981 (gender: neuter), type species *Lepisma globosa* Escherich, 1905 by original designation;
- (5) to emend the entry for *saccharina* Linnaeus, 1758 on the Official List of Specific Names in Zoology to read '*saccharinum* Linnaeus, 1758', the latter being deemed the correct original spelling in accordance with the ruling in (1) above;
- (6) to place on the Official List of Specific Names in Zoology the name *longicaudatum* Escherich, 1905, as published in the binomen *Ctenolepsisma longicaudata*.

or

Set B

- (1) to rule under its specific powers that the gender of *Lepisma* shall remain feminine as mandated by Direction 71;
- (2) to use its specific powers under of the Code to require that all generic names derived from *Lepisma* be treated as neuter in accordance with Article 30.1.2;
- (3) to place on the Official List of Generic Names in Zoology the following names in accordance with (1) and (2) above:
 - (a) *Afrolepsisma* Mendes, 1981 (gender: neuter), type species *Lepisma traegardhi* Silvestri, 1913 by original designation;
 - (b) *Anisolepsisma* Paclt, 1967 (gender: neuter), type species *Heterolepsisma hartmeyeri* Silvestri, 1908 by original designation;
 - (c) *Asiolepsisma* Kaplin, 1989 (gender: neuter), type species *Asiolepsisma aellae* Kaplin, 1989 by original designation;
 - (d) *Burmalepsisma* Mendes and Poinar, 2008 (gender: neuter), type species *Burmalepsisma cretacicum* Mendes & Poinar, 2008 by original designation;
 - (e) *Cretalepsisma* Mendes & Wunderlich, 2013 (gender: neuter), type species *Cretalepsisma kachinicum* Mendes & Wunderlich, 2013 by original designation;
 - (f) *Ctenolepsisma* Escherich, 1905 (gender: neuter), type species *Lepisma lineata* Fabricius, 1775 by subsequent designation by Paclt, 1967 p. 38 on the grounds of priority;
 - (g) *Gopsilepsisma* Irish, 1989 (gender: neuter), type species *Gopsilepsisma veracunda* Irish, 1989 by original designation;
 - (h) *Hemilepsisma* Paclt, 1967 (gender: neuter), type species *Braunsiella heymonsi* Escherich, 1905 by original designation;
 - (i) *Heterolepsisma* Escherich, 1905 (gender: neuter), type species *Lepisma pampeana* Silvestri, 1902 by subsequent designation by Paclt, 1967;
 - (j) *Hyperlepsisma* Silvestri, 1932 (gender: neuter), type species *Hyperlepsisma patrizii* Silvestri, 1932 by original designation;

- (k) *Leucolepisma* Wall, 1954 (gender: neuter), type species *Leucolepisma arenaria* Wall, 1954 by original designation;
- (l) *Mirolepisma* Silvestri, 1938 (gender: neuter), type species *Mirolepisma deserticola* Silvestri, 1938 by original designation;
- (m) *Nebkhalepisma* Irish, 1988c (gender: neuter), type species *Hyperlepisma australis* Wygodzinsky, 1960 by original designation;
- (n) *Neoasterolepisma* Mendes, 1988 (gender: neuter), type species *Lepisma foreli* Moniez, 1894 by original designation;
- (o) *Ornatilepisma* Irish, 1988 (gender: neuter), type species *Ornatilepisma horni* Irish, 1988 by original designation;
- (p) *Panlepisma* Silvestri, 1940 (gender: neuter), type species *Panelpisma argentina* Silvestri, 1940 by original designation.
- (q) *Protolepisma* Mendes & Poinar, 2013 (gender: neuter), type species *P. tainicum* Mendes & Poinar, 2013 by original designation;
- (r) *Psammolepisma* Irish, 1988 (gender: neuter), type species *Ctenolepisma schultzei* Silvestri, 1908f by original designation;
- (s) *Sabulepisma* Irish, 1988 in Irish & Mendes, 1988 (gender: neuter), type species *Sabulepisma multiformis* Irish, 1988 in Irish & Mendes, 1988 by original designation;
- (t) *Sceletolepisma* Wygodzinsky, 1955 (gender: neuter), type species *Ctenolepisma (Sceletolepisma) arenicola* Wygodzinsky, 1955 by original designation;
- (u) *Swalepisma* Irish, 1988 in Irish & Mendes, 1988 (gender: neuter), type species *Swalepisma mirabilis* Irish, 1988 in Irish & Mendes, 1988 by original designation;
- (v) *Tricholepisma* Paclt, 1967 (gender: neuter), type species *Lepisma aurea* Dufour, 1831 by original designation;
- (w) *Xenolepisma* Mendes, 1981a (gender: neuter), type species *Lepisma globosa* Escherich, 1905 by original designation;
- (4) to place on the Official List of Specific Names in Zoology the name *longicaudatum* Escherich, 1905, as published in the binomen *Ctenolepisma longicaudata*.

or

Set C

- (1) to rule under its specific powers that the gender of *Lepisma* shall remain feminine as mandated by Direction 71;
- (2) to rule under the plenary power that Article 30.1.2 of the Code notwithstanding, all genus-group names derived from *Lepisma* are to be treated as being of feminine gender;
- (3) to place on the Official List of Generic Names in Zoology the following names in accordance with (1) and (2) above:
 - (a) *Afrolepisma* Mendes, 1981 (gender: feminine), type species *Lepisma traegardhi* Silvestri, 1913 by original designation;
 - (b) *Anisolepisma* Paclt, 1967 (gender: feminine), type species *Heterolepisma hartmeyer* Silvestri, 1908 by original designation;
 - (c) *Asiolepisma* Kaplin, 1989 (gender: feminine), type species *Asiolepisma aellae* Kaplin, 1989 by original designation;

- (d) *Burmalepisma* Mendes and Poinar, 2008 (gender: feminine), type species *Burmalepisma cretacicum* Mendes & Poinar, 2008 by original designation;
 - (e) *Cretalepisma* Mendes & Wunderlich, 2013 (gender: feminine), type species *Cretalepisma kachinicum* Mendes & Wunderlich, 2013 by original designation;
 - (f) *Ctenolepisma* Escherich, 1905 (gender: feminine), type species *Lepisma lineata* Fabricius, 1775 by subsequent designation of Paclt, 1967 (p. 38) on the grounds of priority;
 - (g) *Gopsilepisma* Irish, 1989 (gender: feminine), type species *Gopsilepisma veracunda* Irish, 1989 by original designation;
 - (h) *Hemilepisma* Paclt, 1967 (gender: feminine), type species *Braunsiella heymonsi* Escherich, 1905 by original designation;
 - (i) *Heterolepisma* Escherich, 1905 (gender: feminine), type species *Lepisma pampeana* Silvestri, 1902 by subsequent designation of Paclt, 1967;
 - (j) *Hyperlepisma* Silvestri, 1932 (gender: feminine), type species *Hyperlepisma patrizii* Silvestri, 1932 by original designation;
 - (k) *Leucolepisma* Wall, 1954 (gender: feminine), type species *Leucolepisma arenaria* Wall, 1954 by original designation;
 - (l) *Mirolepisma* Silvestri, 1938 (gender: feminine), type species *Mirolepisma deserticola* Silvestri, 1938 by original designation;
 - (m) *Nebkhalepisma* Irish, 1988 (gender: feminine), type species *Hyperlepisma australis* Wygodzinsky, 1960 by original designation;
 - (n) *Neoasterolepisma* Mendes, 1988a (gender: feminine), type species *Lepisma foreli* Moniez, 1894 by original designation;
 - (o) *Ornatilepisma* Irish, 1988 (gender: feminine), type species *Ornatilepisma horni* Irish, 1988 by original designation;
 - (p) *Panlepisma* Silvestri, 1940 (gender: feminine), type species *Panelpisma argentina* Silvestri, 1940 by original designation;
 - (q) *Protolepisma* Mendes & Poinar, 2013 (gender: feminine) type species *P. tainicum* Mendes & Poinar, 2013 by original designation;
 - (r) *Psammolepisma* Irish, 1988 (gender: feminine), type species *Ctenolepisma schultzei* Silvestri, 1908f by original designation;
 - (s) *Sabulepisma* Irish, 1988 in Irish & Mendes, 1988 (gender: feminine), type species *Sabulepisma multiformis* Irish, 1988 in Irish & Mendes, 1988 by original designation;
 - (t) *Sceletolepisma* Wygodzinsky, 1955 (gender: feminine), type species *Ctenolepisma (Sceletolepisma) arenicola* Wygodzinsky, 1955 by original designation;
 - (u) *Swalepisma* Irish, 1988 in Irish & Mendes, 1988 (gender: feminine), type species *Swalepisma mirabilis* Irish, 1988 in Irish & Mendes, 1988 by original designation;
 - (v) *Tricholepisma* Paclt, 1967 (gender: feminine), type species *Lepisma aurea* Dufour, 1831 by original designation;
 - (w) *Xenolepisma* Mendes, 1981 (gender: feminine), type species *Lepisma globosa* Escherich, 1905 by original designation.
- (4) to place on the Official List of Specific Names in Zoology the name *longicaudata* Escherich, 1905, as published in the binomen *Ctenolepisma longicaudata*.

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Comments on this case are invited for publication (subject to editing) in the *Bulletin*; they should be sent to I.C.Z.N., Natural History Museum, Cromwell Road, London SW7 5BD, U.K. (e-mail: iczn@nhm.ac.uk).

Case 3700

***Diplodocus* Marsh, 1878 (Dinosauria, Sauropoda): proposed designation of *D. carnegii* Hatcher, 1901 as the type species**

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Abstract. The purpose of this application, under Articles 78.1 and 81.1 of the Code, is to replace *Diplodocus longus* Marsh, 1878 as the type species of the sauropod dinosaur genus *Diplodocus* by the much better represented *D. carnegii* Hatcher, 1901, due to the undiagnosable state of the holotype of *D. longus* (YPM 1920, a partial tail and a chevron). The holotype of *D. carnegii*, CM 84, is a well-preserved and mostly articulated specimen. Casts of it are on display in various museums around the world, and the species has generally been used as the main reference for studies of comparative anatomy or phylogeny of the genus. Both species are known from the Upper Jurassic Morrison Formation of the western United States. The genus *Diplodocus* is the basis for the family-level taxa DIPLODOCINAE Marsh, 1884, DIPLODOCIDAE Marsh, 1884, DIPLODOCIMORPHA Marsh, 1884 (Calvo & Salgado, 1995) and DIPLODOCOIDEA Marsh, 1884 (Upchurch, 1995). It is also a specifier of at least 10 phylogenetic clades. With the replacement of *D. longus* by *D. carnegii* as type species, *Diplodocus* could be preserved as a taxonomic name with generally accepted content. Taxonomic stability of the entire clade DIPLODOCOIDEA, and the proposed definitions of several clades within Sauropoda, could be maintained.

Keywords. Nomenclature; taxonomy; Dinosauria; Sauropoda; DIPLODOCIDAE; *Diplodocus*; *Diplodocus longus*; *Diplodocus carnegii*; U.S.A.; Upper Jurassic Morrison Formation.

1. The genus *Diplodocus* Marsh, 1878 was named by Marsh (1878, p. 412) based on remains from Marsh-Felch Quarry 1, near Garden Park, Colorado, U.S.A. The type and first described species is *D. longus* Marsh, 1878 (p. 414) with the type specimen being YPM 1920 in the Yale Peabody Museum, New Haven, U.S.A. (Marsh, 1878, p. 414, misprinted as p. 514). The specimen was not the only find from the quarry, and various bones were initially referred to the holotype: a skull, a string of anterior to mid-caudal vertebrae, one chevron (on whose morphology with two horizontally oriented rods the

generic name, meaning ‘double beam’, is based), a femur, and a pes now cataloged as YPM 1906 (Marsh, 1878; McIntosh & Carpenter, 1998). However, only the caudal vertebrae and the chevron can be confidently interpreted to be from the same individual (McIntosh & Carpenter, 1998). Given that Marsh (1878) based his diagnosis of the new genus on characters from the chevron and the caudal vertebrae, only these can be considered to constitute the holotype. Of the 17 caudal vertebrae initially found, only two remain reasonably complete (Figs 1, 2; McIntosh & Carpenter, 1998; Tschopp et al., 2015). These can be confidently identified as belonging to the genus *Diplodocus*, because of the presence of well-developed caudal pneumatopores until at least caudal vertebra 16, a feature that was recovered as an unambiguous synapomorphy for the genus *Diplodocus* by Tschopp et al. (2015). Although the exact position of the string of caudal elements of YPM 1920 is difficult to establish (McIntosh & Carpenter, 1998), comparisons with AMNH 223 in the American Museum of Natural History, New York City, U.S.A., CM 94 in the Carnegie Museum of Natural History, Pittsburgh, U.S.A., DMNS 1494 in the Denver Museum of Nature and Science, Denver, U.S.A., and USNM 10865 indicate that this diagnostic feature also occurs in YPM 1920 in the Smithsonian Institution, Washington DC, U.S.A. (McIntosh & Carpenter, 1998; Tschopp et al., 2015). However, whereas the attribution of YPM 1920 and the remaining specimens in the same genus-level clade (as recovered by Tschopp et al., 2015) to a single genus is well supported, the study found no species-level autapomorphies in YPM 1920, so *D. longus* must be treated as a nomen dubium (Tschopp et al., 2015).

2. A second species, *Diplodocus lacustris* Marsh, 1884 (p. 166) was named based on teeth from Lakes Quarry 5 at Morrison, Colorado, and a supposedly associated

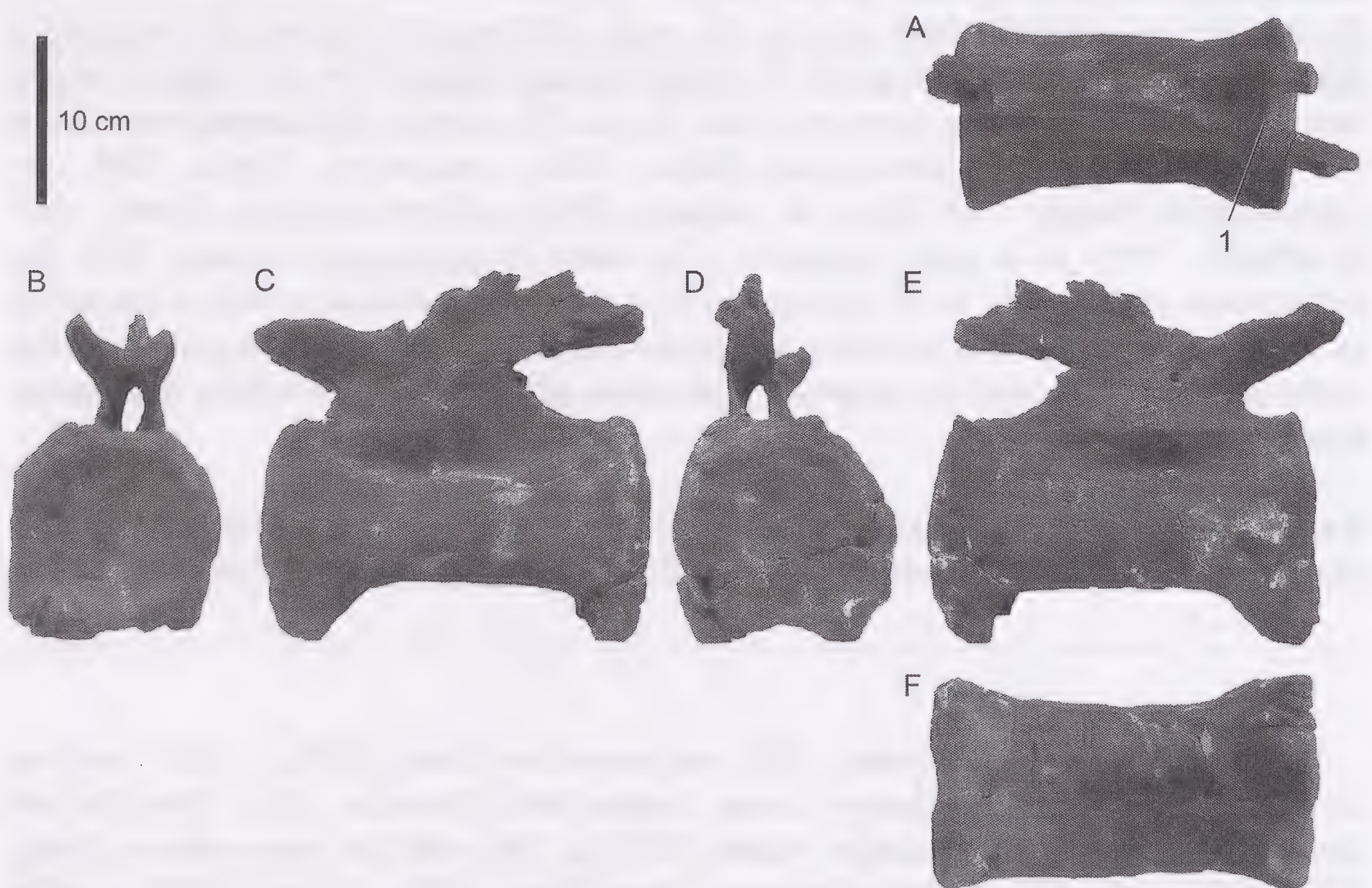


Fig. 1. More anterior of the only two reasonably complete caudal vertebrae of the type specimen of *Diplodocus longus* (YPM 1920) in dorsal (A), anterior (B), left (C), posterior (D), right (E), and ventral (F) views. The neural spine is lost. The estimated position within the caudal column is caudal vertebra 17–24. Note the transverse ridge between the prezygapophyses shared with AMNH 223 (1).

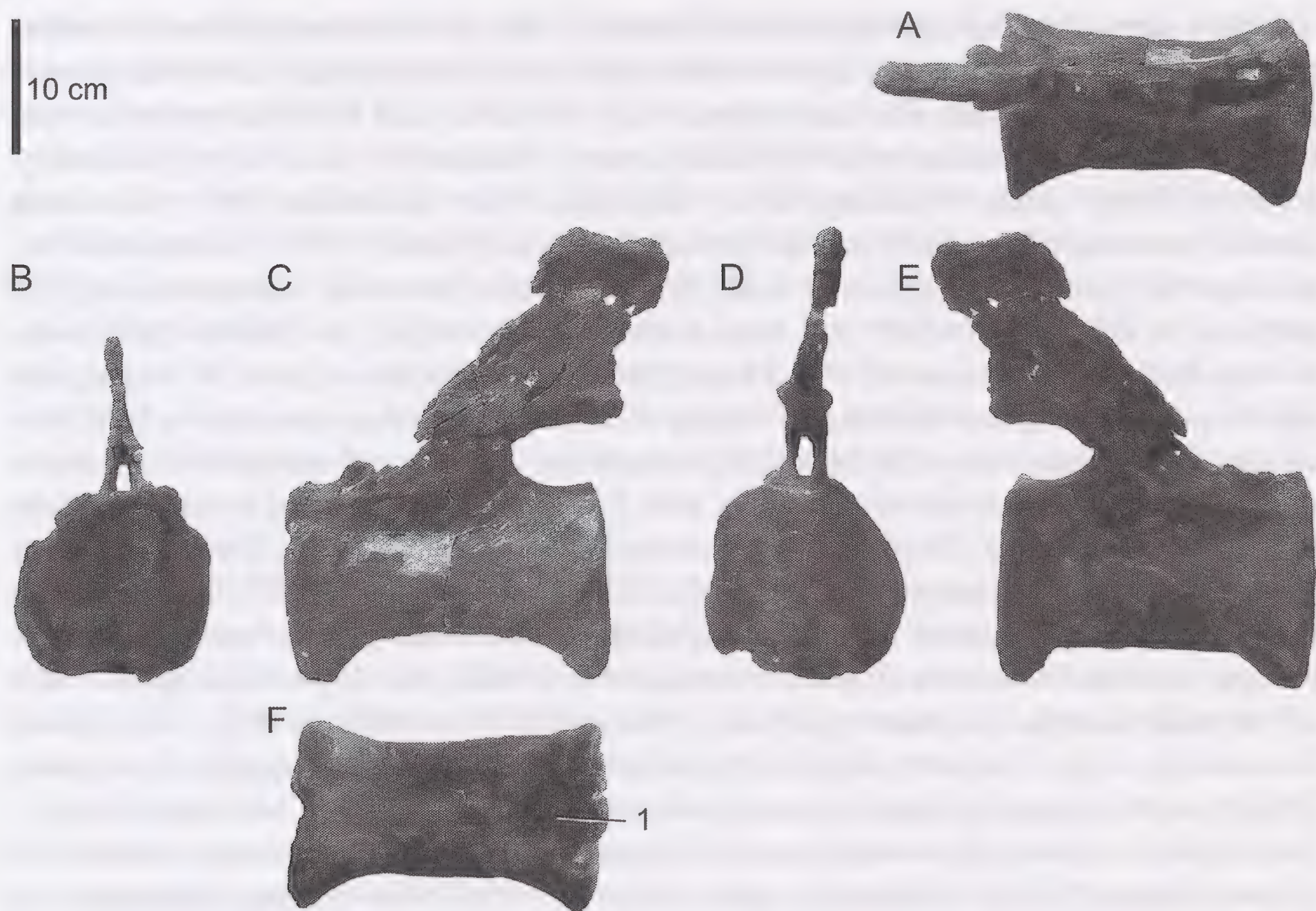


Fig. 2. More posterior of the only two reasonably complete caudal vertebrae of the type specimen of *Diplodocus longus* (YPM 1920) in dorsal (A), anterior (B), left (C), posterior (D), right (E), and ventral (F) views. The prezygapophyses are lost. The estimated position within the caudal column is caudal vertebra 18–25. Note the deep ventral hollow often considered diagnostic for *Diplodocus* (1).

premaxilla and maxilla (Marsh, 1884; type specimen YPM 1922). In the same paper, Marsh (1884, p. 167) coined the name of the higher-level taxon DIPLODOCIDAE, with which the still widely used names DIPLODOCINAE and DIPLODOCOIDEA are coordinate (Upchurch, 1995). A recent study mentions camarasaurid affinities for the premaxilla and maxilla of YPM 1922 (Tschopp et al., 2015), leaving just the teeth to belong definitively to a single individual. YPM 1922 was the most unstable operational taxonomic unit in the specimen-level cladistic analysis of Tschopp et al. (2015), and could not be confidently referred to any clade below Flagellicaudata. ‘*D.*’ *lacustris* should therefore be treated as a nomen dubium and may not even be to a diplodocine (Tschopp et al., 2015).

3. Osborn (1899) described a reasonably complete specimen from Como Bluff, Wyoming (AMNH 223), and referred it to *Diplodocus longus* based on the deep ventral longitudinal hollow in the caudal vertebrae, which is often mentioned as diagnostic feature of the genus *Diplodocus* (Fig. 2F; Osborn, 1899; Curtice, 1996; McIntosh, 2005). However, it has recently been shown that all species of *Diplodocus* bear this hollow, so its presence can be used as an autapomorphy for the genus, but not for a particular species (Tschopp et al., 2015). Even though Tschopp et al. (2015) recognized a feature shared by YPM 1920 and AMNH 223 (a horizontal transverse ridge posterior to the prezygapophyseal facets of the mid-caudal vertebrae; Fig. 1A), their phylogenetic analysis did not recover the two as a clade separate from the other *Diplodocus* specimens. This shared feature is thus considered individually variable and not taxonomically significant. AMNH 223 was referred to *Diplodocus hallorum* (Gillette, 1991) by Tschopp et al. (2015), so a reassignment of AMNH 223 as neotype of *D. longus* cannot be justified.

4. Two years after Osborn's description, Hatcher (1901, p. 57) described a new species, *Diplodocus carnegii*, based on an articulated specimen with cervical, dorsal, sacral and anterior caudal vertebrae, ribs, and appendicular elements (CM 84). The specimen was found with a second specimen, CM 94 (the paratype specimen of *D. carnegii*), at Quarry D (3) at Sheep Creek, Wyoming, U.S.A. (Hatcher, 1901; McIntosh, 1981). Given the incompleteness of the holotype specimen of *D. longus*, Hatcher (1901) established the new species based on comparisons with the much better preserved and more complete specimen AMNH 223, which had been referred to *D. longus* by Osborn (1899; see above). Recent comparisons of CM 84 and CM 94 with the holotype of *D. longus*, did not reveal unique shared features (Tschopp et al., 2015), so that synonymy of the two species can be ruled out. CM 84 still represents one of the most complete *Diplodocus* specimen known (Tschopp et al., 2015), and it was complemented with material from CM 94 and other, less complete specimens in order to create a mount for the Carnegie Museum of Natural History in Pittsburgh (Holland, 1906; McIntosh, 1981; Curtice, 1996; Nieuwland, 2010). Casts of this composite skeleton were sent to numerous museums in Europe, Asia and Central and South America, which made this *Diplodocus* species one of the most famous dinosaurs worldwide (Holland, 1906; McIntosh, 1981; Rea, 2004; Nieuwland, 2010). Thanks to the worldwide distribution and the high quality of its casts, CM 84, with its complementary components, still remains one of the most easily accessible dinosaur specimens to study, and is indeed the most visited dinosaur skeleton of all time (Rea, 2004). Consequently, most studies of comparative anatomy, phylogeny or functional morphology that include *Diplodocus* are mainly based on *D. carnegii* (e.g. Stevens & Parrish, 1999; Bedell & Trexler, 2005; McIntosh, 2005; Carrano, 2006; Harris, 2006; Taylor et al., 2009; Whitlock, 2011; Woodruff & Fowler, 2012; Tschopp & Mateus, 2013; Wedel & Taylor, 2013).

5. A fourth nominal species, *Diplodocus hayi*, was added to the genus by Holland (1924, p. 399), based on remains found at Quarry A at Red Fork of the Powder River in Wyoming. The holotype specimen HMNS 175 in the Houston Museum of Nature and Science, Houston, U.S.A. (at the time accessioned at the Carnegie Museum under the number CM 662; McIntosh, 1981) is even more complete than CM 84, and includes a partial skull and cervical, dorsal and anterior and mid-caudal vertebrae, as well as elements from both girdles and fore- and hindlimbs, including a nearly complete manus and a partial pes (McIntosh, 1981; Tschopp et al., 2015). However, the initial description of Holland (1924) solely concerned the braincase. The erection of the new species was based on differences with another skull referred to *Diplodocus* by the same author (CM 11161 from Dinosaur National Monument, Utah, U.S.A.). The braincase of HMNS 175 remains the only described element of the entire holotypic skeleton. When erecting *D. hayi* as new species of *Diplodocus*, Holland (1924) noted that differences in braincase morphology between the type specimen HMNS 175 and CM 11161 might prove numerous enough to justify generic distinction of the two (Holland, 1924). Recently, this proposal was corroborated by a phylogenetic study, and the species *hayi* was established as type species of the new genus *Galeamopus* Tschopp, Mateus & Benson, 2015.

6. A reasonably complete specimen from Dinosaur National Monument (USNM 10865) was preliminarily described by Gilmore (1932). Gilmore (1932) referred USNM 10865 to *Diplodocus longus*, but only due to similarities with AMNH 223. He further noted that specific separation of *D. carnegii* from *D. longus* might not be warranted (Gilmore, 1932), given that USNM 10865 appears to show varying inclinations of the caudal neural

spines (the main character used by Hatcher [1901] to distinguish *D. carnegii* from '*D. longus*' AMNH 223). Tschopp et al. (2015) confirmed the referral of USNM 10865 to the same species as AMNH 223, but to *D. hallorum* instead of *D. longus*.

7. Gillette (1991, p. 418) erected a new genus and species, *Seismosaurus hallorum*, nominating partly articulated material from the vicinity of San Ysidro, New Mexico, as its holotype (NMMNH [New Mexico Museum of Natural History, Albuquerque, U.S.A.] 3690). The generic distinction from *Diplodocus* was mainly based on differences in caudal vertebral ratios (Gillette, 1991), which were later shown to be due to a wrong assignment of anterior elements to a more posterior position (Curtice, 1996; Lucas et al., 2006). *Seismosaurus hallorum* was thus referred to *Diplodocus* (Lucas et al., 2006), possibly even representing a junior synonym of *D. longus* (Lovelace et al., 2007). As in most other cases outlined above, Lovelace et al.'s (2007) referral of NMMNH 3690 to *D. longus* was based on comparisons with the specimen AMNH 223 instead of the holotype specimen YPM 1920. Tschopp et al. (2015) rejected the synonymy of *S. hallorum* and *D. longus*, corroborating instead the establishment of the combination *D. hallorum* as first proposed by Lucas et al. (2006). Tschopp et al. (2015) also referred the specimens AMNH 223, DMNS 1494 and USNM 10865 to this species, and thus confirmed the previous studies in the fact that they all belong to a single species.

8. Although the holotype specimen of the type species *Diplodocus longus* (YPM 1920) can be clearly referred to the genus *Diplodocus* as generally perceived, the lack of specific autapomorphies results in *D. longus* being a nomen dubium. Because *D. longus* is the type species of the genus *Diplodocus*, but is itself not diagnosable, a retention of *D. longus* as type species would create insecurities and confusion concerning the use of *Diplodocus* as a genus. A way to avoid this would be the designation of a neotype, but this is inappropriate, because no other, diagnostic material currently can be referred to the same species based on shared morphology. Due to the frequency of citation and popularity of the name *Diplodocus*, and because of the fact that well-preserved specimens are known from other species confidently referred to the same genus as YPM 1920 (Tschopp et al., 2015), the replacement of *D. longus* as type species is advisable.

9. Since '*Diplodocus*' *lacustris* is also not diagnosable, and may not even be a diplodocine, the most suitable available species to replace *D. longus* as type species of *Diplodocus* would be *D. carnegii*, with the type specimen being CM 84 (Hatcher, 1901). *D. carnegii* is the best known and documented species of *Diplodocus*. Its type specimen, CM 84, preserves elements of nearly all portions of the skeleton, including a complete vertebral column from cervical vertebra 2 to caudal vertebra 12, cervical and dorsal ribs, pectoral and pelvic girdle elements, and a femur (Hatcher, 1901; McIntosh, 1981). The designed paratype specimen CM 94 (Hatcher, 1901) complements the knowledge about the species' anatomy by preserving mid-caudal vertebrae, forelimb elements a tibia, fibula and partial pes (Hatcher, 1901; McIntosh, 1981). As mentioned above, *D. carnegii* has become famous around the world and is the informal reference species for the genus *Diplodocus* thanks to the wide availability of casts, nearly complete knowledge of its skeletal anatomy, and the high quality of the initial description with a large number of adequate figures (Hatcher, 1901). This informal use of *D. carnegii* as the reference for the genus *Diplodocus* could be made official by replacing *D. longus* as type species by *D. carnegii*. Also, comparisons of new specimens with AMNH 223 as the wrong reference for the type species could be avoided. In the improbable case that new studies show that *D. longus* and *D. carnegii* are in fact the same species, replacing *D. longus* as type

species by *D. carnegii* could result in the new type species becoming a junior synonym of the old one. However, the incompleteness of YPM 1920 makes the identification of diagnostic features shared with *D. carnegii* highly improbable. In fact, the only currently recognized unique shared morphological feature of the type specimen of *D. longus* with any other *Diplodocus* specimen (AMNH 223, see above) rather indicates synonymy with *D. hallorum*. An alternative to replacing of the type species could be to designate CM 84 (the type specimen of *D. carnegii*) as neotype of *D. longus*. However, there are no morphological grounds for such a proposal, which would furthermore result in the loss of the popular species name *D. carnegii*. Considering the low probability of synonymy of *D. longus* and *D. carnegii*, the proposed replacement of the type species is thus preferable over a designation of CM 84 as neotype of *D. longus*.

10. In addition to giving the names to four higher-level clades within the family group (DIPLODOCINAE, DIPLODOCIDAE, DIPLODOCIMORPHA and DIPLODOCOIDEA), the genus *Diplodocus* is widely used as a specifier in phylogenetic nomenclature (e.g. for APATOSAURINAE Janensch, 1929, DICRAEOSAURIDAE Janensch, 1929, Macronari and Neosauropoda; Taylor & Naish, 2005). Therefore, its retention and stability within the sauropod family tree is important, and it should not be typified by an undiagnosable type species. Taylor & Naish (2005, table 1) alone listed 12 clades for which *Diplodocus* is an internal or external specifier.

11. Similar cases as the one proposed herein were submitted for the dinosaurs *Cetiosauriscus* (Charig, 1993), *Cetiosaurus* (Upchurch et al., 2009) and *Stegosaurus* (Galton, 2011). All of these cases were proposed due to non-diagnostic original type specimens and thus invalid original type species, and were accepted by the Commission (Opinions 1801, 2320 and 2331). Despite Article 80.5 and the Principle 8 of the Code's Introduction, both of which emphasize that a ruling on a case concerns that case only, a different treatment of *Diplodocus* would be unreasonable given the similarity of these cases. Taxonomic uncertainty within the genus *Diplodocus* would be retained and identification of future finds to species level would be considerably hampered.

12. The International Commission on Zoological Nomenclature is accordingly asked:
- (1) to use its plenary power to set aside all previous type species fixations for the genus *Diplodocus* Marsh, 1878 and to designate *D. carnegii* Hatcher, 1901 as its type species;
 - (2) to place on the Official List of Generic Names in Zoology the name *Diplodocus* Marsh, 1878 (gender: masculine), type species *D. carnegii* Hatcher, 1901, as ruled in (1) above;
 - (3) to place on the Official List of Specific Names in Zoology the name *carnegii* Hatcher, 1901 as published in the binomen *Diplodocus carnegii* (specific name of the type species of *Diplodocus* Marsh, 1878), as ruled in (1) above.

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Comments on this case are invited for publication (subject to editing) in the *Bulletin*; they should be sent to the Executive Secretary, I.C.Z.N., Natural History Museum, Cromwell Road, London SW7 5BD, U.K. (e-mail: iczn@nhm.ac.uk).

Case 3688

CHARINIDAE Gray 1849 (Reptilia, Squamata, Serpentes): proposed suppression

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Abstract. The purpose of this application, under Article 23.9.3 of the Code, is to suppress the little-used senior homonym CHARINIDAE Gray, 1849 in order to conserve the family-group name CHARINIDAE Quintero, 1986. CHARINIDAE Quintero, 1986 is a well-established name for the most speciose group of Amblypygi, while CHARINIDAE (originally CHARININI) Gray, 1849 has been little used since its original proposal; to resurrect this name would be disruptive to both arachnid and snake taxonomy. The suppression of CHARINIDAE Gray 1849 will help to conserve its widely used junior synonym UNGALIOPHEINAE McDowell, 1987. The name CHARINIDAE Cope, 1886 is declared nomen oblitum under Article 23.9.2 of the Code. The family-group name CHARINUSIDAE Pyron, Reynolds & Burbrink, 2014 (Arachnida) proposed to replace the family-group name CHARINIDAE Quintero, 1986 is unavailable and unnecessary.

Keywords. Nomenclature; taxonomy; Arachnida; Serpentes; CHARINIDAE; CHARINUSIDAE; UNGALIOPHEINAE; *Charinus*; *Charina*; *Ungaliophius*; whip-spiders; boid snakes.

1. Gray (1849, p. 84) used CHARININA as a new taxon name of unspecified rank based on the snake genus name *Charina* Gray, 1849. *Charina bottae* (Blainville, 1835) is the type species of *Charina* Gray by monotypy. Because CHARININA is clearly a taxon above the generic level, it has the status of a family.

2. CHARININA Gray, 1849 was listed among the synonyms of the subfamily BOINAE Gray, 1825 by Boulenger (1893, p. 93).

3. Cope (1886, p. 294) introduced CHARINIDAE, based again on *Charina* Gray, 1849, stating that he was creating a new family, but did not mention the name CHARININA Gray, 1849. CHARINIDAE Cope, 1886 is a junior objective synonym of CHARINIDAE Gray, 1849, besides being a homonym of the same.

4. The names CHARINIDAE Gray, 1849 and CHARINIDAE, Cope 1886 have been seldom used since their original proposals (Pyron, Reynolds & Burbrink, 2014; Solís et al., 2014). As CHARINIDAE Cope, 1886, the family name was used in two listings of family names of snakes: in Noguchi (1909, p. 3, under 'System Cope') and in Gilmore (1938, p. 7).

5. Quintero (1986) introduced the name CHARINIDAE (type genus *Charinus* Simon, 1892) for a family in the order Amblypygi (Arachnida).

6. McDowell (1987, p. 25) established the name UNGALIOPHEINAE as a subfamily of TROPIDOPHEIDAE Brongersma, 1951 to include two genera, *Ungaliophis* Müller, 1880 and *Exiliboa* Bogert, 1968. These two genera were considered to belong to UNGALIOPHEIDAE McDowell, 1987 by Zaher (1994, pp. 471–478), Savage (2002, pp. 569–570) and Noonan & Chippindale (2006, pp. 347–358). Previous to 2014, different authors (for example, Pyron, et al., 2013, p. 47) have considered UNGALIOPHEINAE as a subfamily of BOIDAE Gray, 1825. The name is widely used (e.g. McDowell, 1987; Smith & Preston, 1987; Villa & Wilson, 1990; Zaher, 1994; Savage, 2002; Noonan & Chippindale, 2006; Pyron, Reynolds & Burbrink, 2013, 2014; Hoser, 2013; Wallach et al., 2014; Reynolds et al., 2014; The Reptile Database, 1995–2016, etc.). Smith & Preston (1987) explained the correct spelling of the name UNGALIOPHEINAE. Oguiura, Terrarezzi & Batistic, 2009 used CHARININAE only in passing but did not include it in Table 1, p. 129 (Higher classification of snakes used herein), but instead used the following subfamilies of BOIDAE: ERYCINAE, BOINAE and UNGLIOPHIINAE [sic]. Pyron, Reynolds & Wiens, 2013 did not include CHARININAE in their BOIDAE classification.

7. CHARINIDAE Quintero, 1986, type genus *Charinus* Simon, 1892, is the most diverse and largest family in the order Amblypygi (Arachnida), and this family-group name has been used in at least 25 works, published by at least 10 authors over a span of not less than 10 years (Article 3.9.1.2) (e.g. Kovarik, & Vlasta, 1996; Weygoldt, 2000, 2002, 2005, 2006, 2008, 2009, 2010; Baptista & Giupponi, 2002; 2003; Giupponi & Kury, 2002; El-Hennawy, 2002; Giupponi & Baptista, 2003; Harvey, 2003; Armas, 2005, 2006, 2010, 2013; Armas et al., 2009, 2012; Teruel, et al., 2009; Rahmadi, & Kojima, 2010; Rahmadi et al., 2010; Villareal, 2010; Miranda & Giupponi, 2011; Prendini, 2011; Giupponi & Miranda, 2012; Jocqué & Giupponi, 2012; Seiter, & Hörweg, 2013; Seiter & Wolff, 2014; Vasconcelos et al., 2014).

8. Pyron, Reynolds & Burbrink (2014, p. 249) revived CHARININA as CHARINIDAE Gray, 1849 to include the following two subfamilies, UNGALIOPHEINAE (including the genera *Ungaliophis* Müller, 1880 and *Exiliboa*, Bogert 1968) and CHARININAE Gray, 1849 (including the genera *Charina* Gray, 1849 and *Lichanura* Cope, 1861). In the same work (2014, p. 250), CHARINUSIDAE (incorrectly spelled as CHARINUSIIDAE) was conditionally proposed as a replacement name for CHARINIDAE Quintero, 1986 to avoid the recognized homonymy with CHARINIDAE Gray, 1849. This proposal disregards usage of a widely accepted name CHARINIDAE Quintero, 1986. However, CHARINUSIDAE Pyron, Reynolds & Burbrink, 2014 is not an available name, for three reasons: (1) it was proposed conditionally, so it fails Article 15.1 of the Code; (2) it was not explicitly proposed as new, so it fails Article 16.1 of the Code; (3) the only way Pyron, Reynolds & Burbrink, 2014) could propose CHARINUSIIDAE as a new replacement name themselves is if they prove CHARINIDAE Gray, 1849 is a nomen oblitum (Article 55.3.1.1 of the Code), which they did not do.

9. The name CHARINIDAE Quintero, 1986 is a junior homonym of CHARINIDAE Gray, 1849. We argue that the two cited usages of CHARINIDAE Cope, 1886 are mere listings (Article 23.9.6) and hereby declare it a nomen oblitum under Article 23.9.2 of the Code. The list of usages of the name CHARINIDAE Quintero, 1986 held by the Commission secretariat meets the conditions of Article 23.9.1.2 of the Code. However, the name CHARINIDAE Gray has been used as valid by Pyron, Reynolds & Burbrink (2014) after 1899, and therefore Article 23.9.2 cannot be applied.

10. The placement of the long accepted and much used name UNGALIOPHEINAE McDowell 1987 in the synonymy of CHARINIDAE Gray, 1849 is an unnecessary disruption

of nomenclature in the boioid snakes. We propose that CHARINIDAE Gray, 1849 should not take precedence over UNGALIOPHEINAE McDowell, 1987 whenever the two are considered synonyms, based on the extensive usage of the latter name and the almost forgotten status of the former. The clade CHARININAE, as used by Pyron, Reynolds & Burbrink (2014) would be left without a valid family-group name once the Commission accepts the present proposal. We propose CHARINAINAE as a replacement name for this clade.

11. The International Commission on Zoological Nomenclature is accordingly asked:

- (1) to use its plenary power to suppress the name CHARINIDAE Gray, 1849 for the purposes of both the Principle of Priority and the Principle of Homonymy;
- (2) to place on the Official List of Family-Group Names in Zoology the following names:
 - (a) CHARINIDAE Quintero, 1986 (type genus *Charinus* Simon, 1892);
 - (b) UNGALIOPHEINAE McDowell, 1987 (type genus *Ungaliophis* Müller, 1880);
- (3) to place on the Official List of Generic Names in Zoology the following names:
 - (a) *Charinus* Simon, 1892, the type genus of the family CHARINIDAE Quintero, 1986;
 - (b) *Ungaliophis* Müller, 1880, the type genus of the family UNGALIOPHEINAE McDowell, 1987;
- (4) to place on the Official Index of the Invalid and Rejected Names in Zoology the following names:
 - (a) CHARINIDAE Gray, 1849, as suppressed in (1) above;
 - (b) CHARINIDAE Cope, 1886, as a nomen oblitum.

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Comments on this case are invited for publication (subject to editing) in the *Bulletin*; they should be sent to I.C.Z.N., Natural History Museum, Cromwell Road, London SW7 5BD, U.K. (e-mail: iczn@nhm.ac.uk).

Case 3692

***Columba livia* Gmelin, 1789 and *Columba livia domestica* Linnaeus, 1758 (Aves, COLUMBIDAE): proposed conservation of specific and subspecific names in conformance with prevailing usage**

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Abstract. The purpose of this application, under Article 23.9.3 of the Code, is to conserve the existing usage of the name *Columba livia* Gmelin, 1789 by granting *livia* Gmelin, 1789 precedence over the names *domestica* Linnaeus, 1758, *gutturosa* Linnaeus, 1758 and *cucullata* Linnaeus, 1758, whenever any of them is considered a synonym of *livia*. The three latter names are all subjective senior synonyms that cannot be subject to reversal of precedence under Article 23.9.1 of the Code. *Columba livia* Gmelin, 1789, the rock dove or rock pigeon, is a common bird species of pan-global distribution, the ‘wild stem’ of feral pigeons and domestic pigeon breeds and a species of economic and cultural importance. In order to conserve the trinomen *Columba livia domestica* Linnaeus, 1758, which has some modern usage in experimental biology for feral populations and domestic breeds when such a distinction is desired at the subspecies level, it is additionally proposed under Article 23.9.3 to set aside Article 24.1 of the Code and grant *domestica* Linnaeus, 1758 precedence over both *gutturosa* Linnaeus, 1758 and *cucullata* Linnaeus, 1758 whenever either of the latter is considered a synonym of the former.

Keywords. Nomenclature; taxonomy; *Columba livia*; *Columba domestica*; rock dove; feral pigeon.

1. Throughout most of the history of civilisation (Aristotle *c.* 350 B.C., Willughby 1676, Temminck, 1812, Svensson et al., 2010), several widespread, large pigeons have been recognised as occurring in western Europe. Their modern English vernacular names are the ‘rock dove’, the ‘stock dove’ and the ‘woodpigeon’. Feral and domestic pigeons are descended from the rock dove (Darwin, 1859, 1868; Stringham et al., 2012). In the 1700s, however, taxonomic confusion arose between the rock dove (including its domestic or feral derivatives) and the stock dove (e.g. Linnaeus, 1758, 1766; Brisson, 1760, Gmelin, 1789, Bewick, 1797). This was perhaps because the rock dove has never been a natural breeding bird in Sweden (Ericson & Tyrberg, 2004). This confusion was gradually resolved by Temminck (1812), Latham (1823) and Bonaparte (1854), but the former and latter authors’ new sequence, which became widely adopted, was incorrect from a priority perspective.

2. The name *Columba domestica* was established by Linnaeus (1758, p. 162) based on a type series of domestic pigeons, but as a form or variety of the stock dove *Columba oenas* Linnaeus, 1758, a taxonomically incorrect arrangement. Under Article 45.6.4 of

the Code, names proposed before 1961 as forms or varieties are deemed available as subspecific names if the other conditions for availability are met, which is the case here. Gmelin (1789, p. 769) later described what we now call the rock dove under the name *Columba livia*, as another variety of the stock dove, also under *Columba oenas* Linnaeus, 1758. He was perhaps seeking to distinguish naturally wild European populations of the rock dove from the various domestic breeds or ferals that had been referred to under a plethora of other names by Linnaeus (1758, 1766) and other early authors (see Table 1) and from the stock dove. However, his taxonomy was again based on Linnaeus's (1758, 1766) incorrect sequence.

3. Pigeons which we now refer to as of the species *Columba livia* are among the most familiar and cosmopolitan of all birds, being found in towns, cities and on coastal cliffs throughout the world (e.g. Townsend, 1915; Baptista et al., 1997). The vernacular name 'rock dove' or 'rock pigeon' is generally used to refer to the wild species or naturalised populations. The vernacular name 'feral pigeon' is also used for naturalised populations. Domestication and selective breeding have led to the development of many particular domestic breeds with recognisable plumage features, as well as racing or homing pigeons. Various individuals of these birds have subsequently escaped or bred with wild populations, resulting in the mixture of plumages today seen in the feral pigeons of towns and countryside (Goodwin, 1983). Wild-phenotype individuals can be observed within feral populations, but leucisms, melanisms and other unusual plumage features are prevalent. Intergradations between 'pure' wild stock and melanistic or leucistic individuals have resulted in flocks consisting wholly of original wild-phenotype birds being highly localised and endangered, restricted to remote regions such as the Outer Hebrides and Fair Isle of Scotland (Snow & Perrins, 1998, Gibbs et al., 2001). Darwin (1859, 1868) famously studied pigeons in detail, concluding that domestic breeds and feral pigeons were all descended from wild rock doves, a proposition previously mooted by Willughby (1676, 1678), Buffon (1771), Bewick (1797), Latham (1823) and others. This is also now supported by molecular studies (e.g. Dybus & Knapik, 2005, Stringham et al., 2012).

4. The Commission should assume that populations referred to by the two names *livia* and *domestica* (and others listed in Table 1) are widely and uncontroversially regarded as subjective synonyms at the species level and essentially universally referred to as *C. livia* (see citations below). At subspecies level, most modern authors treat all ferals, domestics and western European wild rock doves as subspecies *livia* and recognise *domestica* or other breed names only as infrasubspecific names or synonyms. As noted by Gentry et al. (2004, p. 646), the name *Columba livia* is given to both wild and domesticated birds. This pattern of usage is distinct from that found with respect to the names of various wild and domesticated animals that were ruled on in Opinion 2027 (BZN 60: 81–84, March 2003).

5. Many names were proposed for domestic breeds of pigeons in the 1700s. The status of such names described up to and including 1789 with respect to the names *livia* and *domestica* is set out in Table 1, based on Donegan (2015, pp. 26–27).

6. As noted above, the stock dove (widely referred to as *C. oenas* Linnaeus, 1758) was erroneously considered part of the same species as the rock dove/feral pigeon/domestics in the mid-1700s (e.g. Linnaeus, 1758, p. 162; 1766, p. 279, Brisson, 1760, p. 82). The name *C. oenas* was itself also based on a mixed type series, mostly of stock dove specimens but also including one feral pigeon specimen, a situation that Donegan (2015, p. 22) resolved by designating one of the illustrated stock dove specimens as a lectotype. Latham (1823, pp. 3–4) recognised the errors in Linnaeus's (1758) and Gmelin's (1789)

Table 1. Status of synonyms of the names *domestica* Linnaeus, 1758 and *livia* Gmelin, 1789 of the genus *Columba* Linnaeus, 1758

Name	Author, Year, Page	Status with respect to <i>C. domestica</i> Linnaeus, 1758	Status with respect to <i>C. livia</i> Gmelin, 1789
<i>gutturosa</i>	Linnaeus, 1758, p. 162	Has precedence under Article 24.1, having been described at a higher rank (<i>domestica</i> as a form, <i>gutturosa</i> as a species); Donegan (2015, p. 27) considered that reversal of precedence under Article 23.9.1 is not possible because the trinomen <i>Columba livia gutturosa</i> has been used albeit rarely in recent veterinary literature (e.g. López Murcia et al., 2005, p. 347, Hassanpour et al., 2011, p. 10).	Senior synonym for purposes of Article 23.1; reversal of precedence under Article 23.9.1 is not possible because of the usage noted in the adjacent column.
<i>cucullata</i>	Linnaeus, 1758, p. 162	Has precedence under Article 24.1, having been described at a higher rank (<i>domestica</i> as a form, <i>cucullata</i> as a species); Donegan (2015, p. 27) considered that reversal of precedence under Article 23.9.1 is not possible because the trinomen <i>Columba livia cucullata</i> was used by Seng (1913, pp. 1–13; 1915, p. 355) and Sievers (1939, p. 82).	Senior synonym for purposes of Article 23.1; reversal of precedence under Article 23.9.1 is not possible because of the usage noted in the adjacent column.
<i>turbita</i>	Linnaeus, 1758, p. 162	All 5 names have precedence under Art 24.1, having been described at a higher rank (<i>domestica</i> as a form, the other names as species), but all were declared nomina oblita by Donegan (2015, pp. 26–27) through reversal of precedence under Article 23.9.2 of the Code.	All 24 names are senior synonyms for purposes of Article 23.1, but all were declared nomina oblita by Donegan (2015, pp. 26–27) through reversal of precedence under Article 23.9.2 of the Code.
<i>tremula</i>	Linnaeus, 1758, p. 162	All 24 names are subjective junior synonyms.	
<i>tabellaria</i>	Linnaeus, 1758, p. 163		
<i>hispanica</i>	Linnaeus, 1758, p. 163		
<i>hispidia</i>	Linnaeus, 1758, p. 164		
<i>campana</i>	Pontoppidan, 1763, p. 626		
<i>galeata</i>	Pontoppidan, 1763, p.626		
<i>tympanista</i>	Pontoppidan, 1763, p. 626		
<i>fulicaria</i>	Pontoppidan, 1763, p. 626		
<i>mercurialis</i>	Pontoppidan, 1763, p. 626		
<i>atricapilla</i>	Pontoppidan, 1763, p. 626		
<i>melanura</i>	Pontoppidan, 1763, p. 626		

Name	Author, Year, Page	Status with respect to <i>C. domestica</i> Linnaeus, 1758	Status with respect to <i>C. livia</i> Gmelin, 1789
<i>gyratrix</i>	Pontoppidan, 1763, p. 626		
<i>percussor</i>	Pontoppidan, 1763, p. 626		
<i>turca</i>	Pontoppidan, 1763, p. 626		
<i>vertaga</i>	Brünnich, 1764, p. 60		
<i>melanocephala</i>	Brünnich, 1764, p. 61		
<i>prolifera</i>	Brünnich, 1764, p. 63		
<i>dasypus</i>	Linnaeus, 1766, p. 279		
<i>laticauda</i>	Linnaeus, 1766, p. 280		
<i>turcica</i>	Linnaeus, 1766, p. 281		
<i>testaceoincarnata</i>	Forskål, 1775, p. 5		
<i>incarnata</i>	Forskål, 1775, p. VI		
<i>vulgaris</i>	Forskål, 1775, p. VII		
<i>saxatilis</i>	Gmelin, 1789, p. 769		
			All 5 names were described in the account of <i>C. domestica</i> , at the same taxonomic level as <i>livia</i> , under different Greek letters; <i>livia</i> was considered to have been accorded precedence through implicit first reviser action by Temminck (1813, p. 451) (see Donegan 2015, p. 27).
<i>norwegica</i>	Gmelin, 1789, p. 770		
<i>barbarica</i>	Gmelin, 1789, p. 770		
<i>eques</i>	Gmelin, 1789, p. 771		
<i>jubata</i>	Gmelin, 1789, p. 771		
<i>cristata</i>	Gmelin, 1789, p. 774	Invalid junior homonym of <i>Columba</i> (now <i>Goura</i>) <i>cristata</i> Pallas, 1764 (Donegan, 2015, Supplementary Materials, pp. 1–2).	
<i>maculata</i>	Gmelin, 1789, p. 772	Invalid primary homonym (Donegan 2015, Supplementary Materials, p. 1). Gmelin (1789) proposed the name <i>C. maculata</i> twice, first as a variety after the account of <i>C. domestica</i> (p. 772) and separately for a different species (p. 780). The two names <i>maculata</i> are primary homonyms under Article 53.3, but under Articles 24.1 and 57.7, the name established for a species takes precedence.	

taxonomies. He gave *domestica* ('White-rumped Pigeon') priority over all other names for domestic breeds as well as *livia*, and recognised the 'Stock Pigeon' *C. oenas* as a different species. Reichenbach (1852, p. 25) later used the names *livia* and *oenas* in preference to all other names, but placed *domestica* (and unnamed domestic breeds) within his account of *C. oenas*. Although he erred in his taxonomy, Reichenbach's (1852) nomenclature was sound because the two names he used have priority under that taxonomy. Bonaparte (1854, p. 23) corrected Reichenbach's (1852) taxonomy, recognising *C. oenas* as a wild species that is not domesticated. He also recognised *C. livia* as another wild species that represents the ancestral stock of feral and domestic pigeons. However, rather than reverting to Latham's (1823) names, he maintained Reichenbach's (1852) sequence, applying the junior name *livia* to rock doves, feral pigeons and domestic breeds in preference to *domestica* or other senior names based on domestic breeds. Temminck (1813) earlier had published an important illustrated monograph of pigeons. His vivid illustration of a wild-phenotype rock dove (plate entitled 'Colombe Bizet' *Columba livia* Lath.) (sic.) (see Fig. 4P of Donegan, 2015, Supplementary Materials), and his taxonomy in which other Linnaean names were set out as varieties of *livia* (p. 451), without a doubt also influenced subsequent usage.

7. The wild rock dove is nowadays considered to comprise, or historically to have comprised, between eight and 13 natural, wild allopatric subspecies (Peters, 1937; Gibbs et al., 2001; Dickinson & Remsen, 2013). The validity and distributions of some of these subspecies are difficult to assess due to modern intergradation with feral populations (Goodwin, 1970). Currently recognised subspecies include nominate *livia* Gmelin, 1789, which is considered to encompass natural populations remaining in the British Isles and west Mediterranean through Dalmatia and north Libya, east to the Urals, Caucasus and west Siberia (Gibbs et al., 2001; Dickinson & Remsen, 2013).

8. There is, and since the 1850s has been, an overwhelming majority usage of '*Columba livia*' as the valid species name for rock doves, feral pigeons and domestic breeds. It is difficult adequately to illustrate the widespread nature of such usage through citations in a publication of this nature. A non-exhaustive selection of usages of *Columba livia* as a presumably valid name in leading checklists, selected field guides, family guides, species databases and monographs follows: Hartert et al. (1912, p. 161), Peters (1937, p. 58), Witherby et al. (1940, p. 187), Hellmayr & Conover (1942, p. 431), Vaurie (1965, p. 544), Fitter et al. (1972, p. 171), Goodwin (1983, p. 54), Peterson et al. (1983, p. 130), Robbins et al. (1983, p. 166), Ferguson-Lees et al. (1983, p. 172), Howell & Webb (1995, p. 320), Stotz et al. (1996, p. 158), Baptista et al. (1997, p. 113), Schodde & Mason (1997, p. 17), Snow & Perrins (1998, pp. 839–842), Svensson et al. (1999, p. 200; 2010, p. 214), American Ornithologists Union (2000), Ridgely & Greenfield (2001, p. 170), Gibbs et al. (2001, p. 176), Dickinson (2003, p. 157), Barlow & Wacher (2005, p. 223), Robson (2005, p. 76), Erize et al. (2006, p. 200), Brazil (2009, p. 244), Van Perlo (2009, p. 118), Jeyarajasingam & Pearson (2012, p. 186), Dickinson & Remsen (2013, p. 52), Phillipps & Phillipps (2014, p. 148) and Del Hoyo & Collar (2014, p. 156). The name *C. livia* is also used widely in the scientific literature in diverse research fields, including molecular biology (Johnson et al. 2001), diseases (e.g. Reddy et al. 2007), parasites (e.g. Adang et al., 2008), veterinary science (e.g. Hernández-Divers et al., 2006; Razmyar et al., 2005), homing (Biro et al., 2007; Dell'Araccia et al., 2008), evolution (e.g. Carvalho et al., 2007; Sol, 2008; Rehkaemper et al., 2008), ecology (e.g. Weissgerber, 2008), pest control (Giunchi et al., 2007), comparative psychology (Wright & Katz, 2007) and

building heritage conservation (Haag-Wackernagel & Geigenfeind, 2008). A search of publication databases is illustrative: Google Scholar cited 42,300 publications using the name '*Columba livia*' in 2014 and PubMed includes 1,232. This compares to just 535 and 14 usages respectively of '*Columba domestica*' (e.g. Tryhubczak 1970; Tazara et al. 1994) (*C. livia*: 99% vs. *C. domestica* 1% of the total sample). The name *domestica* has not apparently been afforded species rank in any taxonomic publication (except Oberholser, 1974) or widely-used field guide, family monograph or taxonomic work of which I am aware in the last 100 years. Oberholser (1974) contained various other novel taxonomic arrangements and descriptions that have been criticised (Parkes, 1975; Morony, 1976; Banks & Browning, 1995) and, as in this instance, have not caught on. Any modern usage of the alternative name '*Columba domestica*' as a species name today is so small as to relate largely or solely to a handful of mistakes by non-taxonomists.

9. The name *domestica* is, however, in frequent (but not universal) usage as a subspecific name in trinomials to indicate that an individual or population of these pigeons is of domestic or feral origin. Donegan (2015, p. 27) listed 20 usages of *domestica* as a subspecific name in the periodical literature. Searches revealed 108 examples of subspecific usage in Zoological Abstracts, 64 in PubMed and 1,760 in Google Scholar in 2014 (ca. 4% of the *livia* sample). Usage of such trinomials is infrequent in mainstream avian taxonomy, however. None of the field guides or publications cited in paragraph 3 uses the name *domestica* or a contraction thereof for pigeons, except for Svensson et al.'s (1999, p. 200; 2010, p. 214) annotations of feral pigeons as '*Columba livia* (domest.)' below rock doves listed as *Columba livia*. The contraction 'domest.' is not a 'name' for purposes of the Code, but there have been several appearances of the trinomen *C. livia domestica* in journal articles, for example even in the titles of Poffers et al. (2002), Troccoli (2005), Scullion & Scullion (2007) and Adang et al. (2008). From a priority perspective, usage of this trinomial (a nomenclatural impossibility) might be considered questionable, but these publications do employ *domestica* Linnaeus, 1758, as a presumably valid subspecies name. By affording priority to the name *livia* in the proposed rulings below, this would not prevent those users of bird names who so wish from continuing to use the name *domestica* in trinomials. Given that many individuals of feral populations can be differentiated from wild rock doves due to leucisms and melanisms, trinomials including *domestica* are arguably justifiable under some more liberal subspecies concepts.

10. The name *C. livia* is based on a neotype designated by Donegan (2015, p. 19). This is a specimen that exhibits the ancestral wild-plumage phenotype, taken from one of the few remaining natural populations on Fair Isle, Scotland and accessioned to the Natural History Museum, London (NHMUK) in 1934. The name *C. domestica* was based on a type series of domestic specimens, including two of the 'runt' breed, originally illustrated by Aldrovandi (1600, pp. 462–463) and copied by Willughby (1676, plates 33–34) (all reproduced in Fig. 2 of Donegan, 2015, Supplementary Materials) and a female domestic specimen studied and described in detail but not illustrated by Willughby (1676) (p. 130). The type series cannot be considered 'mixed' under current taxonomy and a lectotype designation for *domestica* is therefore not required to resolve current priority issues (Donegan, 2015, p. 21). The original description of *C. gutturosa* Linnaeus, 1758 referred only to Willughby (1676, p. 121 and plate 34; Fig. 4I of Donegan (2015), Supplementary Materials) and Ray (1713, p. 60), which is an abridged account of Willughby's (1676) description of a domestic pigeon breed. The original description of *C. cucullata* Linnaeus, 1758 was based on *cucullata* s. *jacobea* of Ray (1713, p. 60),

Albin's (1738, pl. 43) Jacobine Pigeon and *Columba anglica* f. *russica* of Gessner (1555, p. 279, illustrated on p. 267). The type series includes the birds illustrated by Albin (1738; Fig. 4R of Donegan (2015), Supplementary Materials), and Gessner (1555, Fig. 4Q of Donegan (2015), Supplementary Materials) and in the drawing by Willughby (1678, plate 33; Fig. 4G of Donegan (2015), Supplementary Materials) of 'Columba cypria cucullata A Jacobine Pigeon', which was the basis for Ray's (1713) account. These are all domestic pigeons with ornate feathering on the rear crown. The type series of *C. domestica*, *C. gutturosa* and *C. cucullata* are therefore each based upon specimens of different breeds of the same biological species ('*livia*' in current usage) and subspecies ('*domestica*' for those who assign domestic and feral birds to a subspecies and recognise only one valid name for it, which is the only more or less widespread taxonomic usage for domestic birds today involving a name other than simply *livia*).

11. The conditions of Article 23.9.1 for reversal of precedence without a Commission ruling are not met for *domestica* due to its usage as a subspecific name in trinomials and its rare use as a specific name (e.g. Tryhubczak, 1970; Oberholser, 1974; Tazawa et al., 1994). The conditions for reversal of precedence of either *C. domestica* or *C. livia* with respect to *C. cucullata* and *C. gutturosa* are not met due to post-1899 usage of the latter names in a handful of non-taxonomic scientific journal articles, cited in Table 1. Articles 17.2 and Article 23.8 of the Code, which relate to names based on hybrids, are not applicable to *domestica*. Domestic pigeon varieties appear to have resulted from selective breeding rather than hybridisation (e.g. Price, 2002; Dybus & Knapik, 2005; Kan et al., 2010; Stringham et al., 2012), although individuals of different wild populations may have been captured and their genotype inserted over the history of pigeon domestication (Stringham et al., 2012). It has been argued that some names based on specimens of domestic breeds may be unavailable on account of being based on hybrids (e.g. Dennler de la Tour, 1959, 1968), but several such names were recently added to the Official List (BZN 60: 81–84, 2003). In this instance, molecular studies present no evidence of a hybrid origin for domestic or feral *C. livia* (Stringham et al., 2012).

12. The current usage of the name '*Columba livia*' and trinomial '*Columba livia domestica*' are, for both, contrary to the Principle of Priority (Article 23.1 of the Code). The Commission is invited here to correct this long-running and untenable situation in avian taxonomy. *Columba livia* is probably one of the most widely used animal names in the world and may be the most widely used bird name, such that having a threat based on priority hanging over it is highly undesirable. Alternative approaches applied recently to names given to domestic and wild populations (e.g. Opinion 2027, BZN 60: March 81–84, 2003; and Opinion 2215, BZN 65(4); 327–328, December 2008) seem inappropriate for *C. livia*, owing to the different pattern of prevailing usage in relation to this name and the particular issues created by the many descriptions for different domestic pigeon breeds in the 1700s.

13. The International Commission on Zoological Nomenclature is accordingly asked to use its plenary power to rule:

- (1) that the name *livia* Gmelin, 1789, as published in the binomen *Columba livia*, has precedence over each of the following names whenever any of following is considered synonymous with it:
 - (a) *domestica* Linnaeus, 1758, as published in the binomen *Columba domestica*;
 - (b) *gutturosa* Linnaeus, 1758, as published in the binomen *Columba gutturosa*; and
 - (c) *cucullata* Linnaeus, 1758, as published in the binomen *Columba cucullata*.

- (2) that the name *domestica* Linnaeus, 1758, as used in the binomen *Columba domestica* or the trinomen *Columba livia domestica*, has precedence over each of the following names whenever either of the following is considered synonymous with it, notwithstanding the precedence that would otherwise be afforded under Article 24.1 of the Code:
- (a) *gutturosa* Linnaeus, 1758, as published in the binomen *Columba gutturosa*;
 - (b) *cucullata* Linnaeus, 1758, as published in the binomen *Columba cucullata*;
- (3) to place on the Official List of Specific Names in Zoology the following names:
- (a) *livia* Gmelin, 1789, as published in the binomen *Columba livia*, with the endorsement that it has precedence over the names *domestica* Linnaeus, 1758, as published in the binomen *Columba domestica*, *gutturosa* Linnaeus, 1758, as published in the binomen *Columba gutturosa* and *cucullata* Linnaeus, 1758, as published in the binomen *Columba cucullata*, whenever any of the latter three names is considered synonymous with it; and
 - (b) *domestica* Linnaeus, 1758, as published in the binomen *Columba domestica*, with the endorsement that it has precedence over the names *gutturosa* Linnaeus, 1758, as published in the binomen *Columba gutturosa* and *cucullata* Linnaeus, 1758, as published in the binomen *Columba cucullata*, whenever either of the latter two names is considered synonymous with it, but that it shall not have precedence over the name *livia* Gmelin, 1789, as published in the binomen *Columba livia*, whenever the two names are considered synonyms.
 - (c) *gutturosa* Linnaeus, 1758, as published in the binomen *Columba gutturosa*, with the annotation that it is not to be given precedence over *domestica* Linnaeus, 1758, as published in the binomen *Columba domestica* or in the trinomen *Columba livia domestica*, nor over *livia* Gmelin, 1789, as published in the binomen *Columba livia*, when either of the latter names is considered synonymous with it.
 - (d) *cucullata* Linnaeus, 1758, as published in the binomen *Columba cucullata*, with the annotation that it is not to be given precedence over *domestica* Linnaeus, 1758, as published in the binomen *Columba domestica* or in the trinomen *Columba livia domestica*, nor over *livia* Gmelin, 1789, as published in the binomen *Columba livia*, when either of the latter names is considered synonymous with it.

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Comments on this case are invited for publication (subject to editing) in the *Bulletin*; they should be sent to I.C.Z.N., Natural History Museum, Cromwell Road, London SW7 5BD, U.K. (e-mail: iczn@nhm.ac.uk).

Comment on *Cognettia* Nielsen & Christensen, 1959 (Annelida, Oligochaeta, ENCHYTRAEIDAE): giving precedence to the name promotes stability
(Case 3689; see BZN 72: 186–192, 303–307)

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(Rut Collado, 2nd author of Case 3689, passed away 14 November 2015.)

1. The authors of the study (Martinsson et al., 2015a) that prompted our application to give precedence of *Cognettia* over its senior synonyms *Chamaedrillus* and *Euenchytraeus* (Schmelz et al., 2015) have recently defended their position to maintain *Cognettia* as an invalid junior synonym (Rota et al., 2015). We distinguish two arguments in their well-written comment: (1) Precedence of *Cognettia* will fail to achieve its main goal, to avoid confusion, because ambiguities in the meaning of species names will persist; these ambiguities and the resulting confusion can be avoided in the future if *Chamaedrillus* is maintained as valid name. (2) The change from *Cognettia* to *Chamaedrillus* has already started to be accepted; instability would result from the reversal of this situation by revalidating *Cognettia*. The arguments are framed by an elaborate presentation of the achievements and novel aspects of the scientific results in the works of Martinsson and co-authors, and emphasis is placed on the advantages of the new concepts for taxonomists and ecologists. We believe that the arguments in Rota et al. are untenable, as will be explained in the following.

2. The first argument may be paraphrased as follows: The two most-cited *Cognettia* species, *sphagnetorum* and *glandulosa*, consist, following the results of Martinsson and co-authors (Martinsson et al., 2015a,b), of four and two different species, respectively, all with different ecology. Citations of these names previous to the mentioned studies are therefore ambiguous, especially in the bulk of ecological literature, because ‘one cannot tell which single taxonomic unit was the object of each ecological study, or where and when a mixture of species was involved’ (Rota et al., 2015, p. 304). (The ambiguity is also virulent in the taxonomic literature, but the authors put stress on ecology because the majority of papers citing *Cognettia* as a valid name are ecological, and ecologists are the principal beneficiaries of our application.) The above-mentioned ambiguity and resulting confusion in the meaning of species names will persist regardless whether *Cognettia* is preserved or not, because the identity of the species in the previous papers cannot be reconstructed. That is, preservation of *Cognettia* is useless. On the other hand, a name change from *Cognettia* to *Chamaedrillus* will hopefully mark a ‘fresh start in the ecological characterization of the individual taxonomic units in the ‘*Cognettia*’ world’ (Rota et al., 2015, p. 305), because, and this is our interpretation, it will draw attention and promote adherence to the results of Martinsson et al. (2015a, b) and so prevent ambiguity

at least in the future. In the authors' words: '... stability must not have priority over lack of ambiguity' (Rota et al., 2015, p. 306).

3. This argument mixes genus level with species level and nomenclatural issues with taxonomic concepts and opinions. The confusions caused by ambiguity of names that Rota et al. (2015) refer to occur at the species level and have as prerequisite the acceptance of the taxonomic results in the works of Martinsson et al. On the other hand, the confusion caused by instability of names that is the object of our application lies at the genus level and has only to do with the Rules of Nomenclature. These are two completely different sources of confusion that should not be mixed. We also believe that decisions concerning nomenclature should not depend on particular taxonomic opinions, they may be shared by a large community of researchers or not. In our application we carefully avoided including taxonomic opinions in the argument. Furthermore, ambiguity is not a concept that is regulated by the Code except when it refers to homonymy. We are therefore not sure whether the first argument has any bearing on the Case at all.

4. The second argument draws on a list of seven papers published in 2015 that have treated *Chamaedrillus* as valid name, to demonstrate that acceptance of the change in nomenclature is already under way. A closer look at the list, however, tells a different story: two papers are authored or co-authored by Martinsson, Rota, or Erséus themselves. All of the remaining five publications have taxonomists as authors or co-authors, and we believe that taxonomists adapt easily to new nomenclatural situations, a 'change back' to *Cognettia* included. This application is not written for taxonomists. Furthermore, one of us (Schmelz) was involved in all five papers, either as co-author, peer reviewer, or as journal editor, and in more than one case he drew attention to the works of Martinsson et al. (2015a), recommending a change of name from *Cognettia* to *Chamaedrillus*. Rota et al. (2015) consider it inconsistent and contradictory to accept the new nomenclature and then to write an application against it. We regret the confusion it may have caused. However, as diligent taxonomists we accepted the most recent opinion until a formally published alternative, in this case, an application to the Commission, was available. We did not notify the submission of the application because the manuscript was still under review when the above-mentioned five papers were published.

5. Rota et al. (2015) highlight the achievements of the work of Martinsson et al. and their positive consequences for future taxonomy and ecology. They have, in our view, and with all due respect towards the scientific results of this work, no direct bearing on this application. However, several problems should not be ignored: The species diagnoses in Martinsson et al. (2015a, b) are mainly based on DNA-sequencing. Only one of the six species distinguished, *Chamaedrillus chlorophilus*, can be identified unequivocally using the conventional light-microscope. For the rest, the flagship species *sphagnetorum* included, ecologists and taxonomists will need sequencing machines and additional funds to determine their thousands of specimens. This will mean a complete change of methods that may be welcomed by molecular ecologists in well-funded institutions. The bulk of poorly funded soil zoologists, however, will have to ignore the molecular distinctions and return to a modified *sensu lato* concept of the species (see Schmelz & Collado, 2010), or they will abandon soil ecological work at the species level altogether. We also see conceptual problems in the paradigm shift from morphology-based to molecular taxonomy in this group. For example, all six species (see above, paragraph 2) reproduce mainly by fragmentation, while the delimitations of species boundaries among molecular clones rest on the arbitrary fixation of thresholds of genetic distances. Furthermore, we have

unpublished evidence that the situation in *Cognettia/Chamaedrillus* is more complicated than presented in the works of Martinsson and co-authors, especially if the relation of the fragmenting clones to the sexually reproducing species is considered. Finally, some of the type designations in Martinsson et al. (2015a) are problematic: The neotype of *sphagnetorum* was selected more or less arbitrarily among the four molecular clades; and the slide with the selected lectotype of *chlorophilus* bears a later date to the one of the original material (Martinsson et al., 2015a) and is from a collection that contained ‘Typen, Kotypen und Lokaltypen’ (Černosvitov 1937, pp. 191–192) – the latter are reference specimens from different localities without name-bearing status.

6. To conclude, we foresee a period of instability of names at the species level, unavoidable because due to advances in research and due to conflicting taxonomic opinions. With this prospect, however, it seems all the more important to address the additional and avoidable instability at the genus level that is caused by the invalidation of *Cognettia*. The application includes two names, *Chamaedrillus* and *Euenchytraeus*, because it depends on taxonomic opinion which of the two names is to have priority over *Cognettia*, and, as stated several times above, nomenclatural issues should not depend on particular taxonomic opinions. Our argument in favour of *Cognettia* as made in the application is not repeated here; it has been supported by Graefe & Beylich (2015) who point to the use of the name *Cognettia* in the terminology of edaphic species associations that indicate decomposer community types.

7. A final remark concerns the publication date of the work of Martinsson and co-authors that prompted our application: We cite it with year 2015 while Rota et al. (2015) prefer 2014. If this is not settled it will create confusion. The paper was published online December 23, 2014, the print version is from May 4, 2015. The headline of the online version was ‘*Systematics and Biodiversity* (2014), 1–21’, but this version is no longer available on the website of the journal. The headline of the print version, also available electronically, is ‘*Systematics and Biodiversity* (2015), **13(3)**: 257–277’, and page numbering has been changed accordingly. To our knowledge it is common practice to cite the version with the definite issue and page number and not the online version when it comes to citing publications. However, Rota et al. obviously consider that the online publication was effective in terms of the Code, referring to the recent Amendments of the Code that introduce new rules regarding the availability of electronic publications (ICZN, 2012). One of the prerequisites, for example, is the registry of names in ZooBank, and this was done in 2014 with the names published in Martinsson et al. (2015a). However, the cited Amendment stipulates, in paragraph 8.1.2., that in order to make names available, a work ‘... must have been produced in an edition ... with fixed content and layout.’ As demonstrated above, the layout of the 2014 version was not fixed – year, issue, and page numbering are different now – therefore one may doubt whether the online version is an effective publication in the meaning of the Code. The Zoological Records have the 2015 version as bibliographic information, as does the website of the journal, but here with the remark: ‘Published online: 23 Dec 2014’. The problem is apparently with the Commission, who should specify better the conditions that make electronic publications effective (Dubois et al., 2015). What should be avoided, however, is to cite papers with issue and page number of the print version and to maintain the year of the online version, as has been done in ZooBank with the reference in question (http://zoobank.org/Search?search_term=chamaedrillus, accessed February 23, 2016) and also in the reference list of Martinsson et al. (2015b). This creates an imaginary reference – even though the

DOI allows one to identify the source – because in 2014 there is no issue 13 of the journal *Systematics and Biodiversity*. To avoid confusion, the publication, when cited with issue and page number, should therefore go with the year 2015, in both text and references sections. In case that the online version is effective, zoological names should be cited in the text using ‘2014’, and the reference should receive an emendation like, for example, ‘effectively published 2014’.

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Comment on *Cognettia* Nielsen & Christensen, 1959 (Annelida, Oligochaeta, ENCHYTRAEIDAE): proposed precedence over *Euenchytraeus* Bretscher, 1906 and *Chamaedrillus* Friend, 1913

(Case 3689; see BZN 72: 186–192, 303–308)

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Cognettia is probably the best-known enchytraeid genus among soil scientists. Given the poor recognition of soil invertebrate taxonomy it is crucial to maintain the nomenclatural stability of this genus so that any information about the ecology, physiology and biology of these little-known organisms becomes more accessible for current and future generations of researchers.

Enchytraeids are not the only organisms suffering from long taxonomical instability. Over the years the LUMBRICIDAE (another family of the class Oligochaeta) has also experienced changes in the names of its genera and species due the lack of agreement in the ranking of diagnostic characters. This has led to the incomprehensible situation in which the same species receives different names in different parts of the world. An additional aggravation of the problem is the recent development of molecular techniques that have revolutionized the way we identify and name species, genera and families. The coining of new terms such as ‘cryptic diversity’ and ‘genetic lineages’ within single species have made it very difficult for ecologists to design and interpret their results from field surveys and experimental manipulations. As an example, in 2010 new work (James et al., 2010) concluded that the most profusely investigated earthworm species, *Lumbricus terrestris*, was indeed two different species based on molecular work (*L. terrestris* and *L. herculeus*). This not only puzzled all soil ecologists working with this ‘species’ and who now wonder how to deal with the past published literature, but also those research teams who have been working and publishing their results on this particular organism for more than 20 years.

As a taxonomist and ecologist, I am very concerned about how far apart the taxonomy and the ecology of soil organisms have been drifting over the years. I strongly defend both worlds and the need for both of them to flow in parallel since one of the more evident failures of gene sequencing is that it does not provide the essential link between one species (gene) identity and its function in nature (see for example, this opinion provided by NERC: <http://planetearth.nerc.ac.uk/features/story.aspx?id=1789&cookieConsent=A>). Indeed, in the case of earthworms my work has allowed me to conclude that anatomical or genetic information alone cannot define any lumbricid genus and that gathering morphological, biological, physiological, ecological and genetic evidence together provides the best tool for solving the current ‘unequal chaos’ of lumbricid taxonomy (Briones et al., 2009). I strongly believe that this statement applies to any other family of the Oligochaeta, including ENCHYTRAEIDAE, which has been the focus of many of my ecological studies. In recent years, several papers have been published with the aim of understanding the phylogenetic relationships among some enchytraeid species (Christensen & Glenner, 2010; Erséus et al., 2010). It is expected that more work will follow and not only *Cognettia* but also the names of other genera could become jeopardised.

The fact that we have more powerful techniques for rapid sequencing of many DNA samples does not mean that we are getting any further insights into what they do. So I

think what we need is to gather more knowledge on species from a wide range of locations, habitats and ecosystems rather than changing the taxonomic status of a particular taxon every time that new genomic information comes to light.

The Principle of Priority (Article 23.1 of the Code) it is ‘the principle of recognising the first valid application of a name to a plant or animal’, but *Chamaedrillus* and *Euenchytraeus*, were rejected by several workers in the past and consequently, they were not considered to be valid for almost a century. Can we now be sure that they have acquired a valid status? Would it not be sensible to allow for more evidence to become available and to prove their validity before moving names backwards and forwards?

Additional references

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Comment on the proposed designation of a neotype for *Nautilus pompilius* Linnaeus, 1758

(Case 3703; BZN 72(4): 274–285)

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After having read the text of Case 3703 I would like to express my full support for the idea to set aside all previous type fixations and designate a neotype for *Nautilus pompilius* Linnaeus, 1758. Shells of chambered nautilus (and primarily the most common *N. pompilius*) are well known collectibles, traded across the globe. However, some particular life history traits (slow growth and late maturation, low fecundity, long embryogenesis) in combination with human-induced pressures (such as habitat destruction and unregulated wild harvest) have made these species vulnerable to overharvest and increased their risk of extinction (De Angelis, 2012). The situation is worsened by the fragmented distribution of *N. pompilius*, with important genetic divergence between populations. As an example, the spatial subdivision between *N. pompilius* living in the Coral Sea and those in the Timor Sea (separated by a gap of ca. 3,000 km) has resulted in strong inter-population genetic difference. Moreover, even two east Australian populations living just ca. 300 km apart have been found to be genetically different geographical clades (Sinclair et al., 2015). Because of this, there is a high risk of losing some of the unique genetic resources in these disparate populations (possibly even unique species and sub-species within the *Nautilus* group). Evidences of strong population decline are already obvious, in some areas and *Nautilus* spp. likely should be assessed as ‘endangered’ in the IUCN (International Union for Conservation of Nature) Red List (Dunstan et al., 2010).

However, *N. pompilius* is not currently listed on the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The IUCN is also still working to assess the conservation status of *Nautilus* using the IUCN Red List Categories. The work aimed at the conservation of this endangered species is hampered by absence of an unambiguous holotype of *N. pompilius*. A neotype designation is urgently needed for the IUCN red list assessments for this species, which are very difficult in the absence of an identifiable type specimen with known provenance, as well as for trade regulations for this species by CITES.

Considering that none of the surviving (or illustrated) syntypes of *Nautilus pompilius* are suitable for lectotype designation and that some syntypes most likely belong to various *Nautilus* species, the identity of this species cannot be presently resolved. Also, a new synthesis on *Nautilus* species and populations, which is about to be published by Saunders et al. (in press) shows that these populations contain a mixture of different species and subspecies, and proposing a neotype for the *Nautilus pompilius* is part of resolving these other (sub)species as well. I also fully support the proposal to use for this purpose the specimen housed in the collections of the Smithsonian Institution (USNM 816877 [AMB 16]).

Additional reference

Dunstan, A., Alanis, O. & Marshall, J. 2010. *Nautilus pompilius* fishing and population decline in the Philippines: A comparison with an unexploited Australian *Nautilus* population. *Fisheries Research*, **106**: 239–247.

Comment on a proposal to affirm that ‘Formenkreis’ is not a genus-group taxonomic rank with potential availability

(Case 3678: see BZN 72: 300–302)

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Herewith I like to support the proposal of E. Gittenberger as published in Case 3678 to rule that ‘Formenkreis’ and equivalent terms have not genus-group rank and are not available names. Those terms are threatening regular genus-group names in various mollusc families.

Comment on a proposal to rule on ‘Formenkreis’

(Case 3678: see BZN 72: 300–302)

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I fully support the arguments put forward by Professor Gittenberger. These will make nomenclatural decisions coherent and easy to implement.

Similar statements in support of Case 3678 were received from:

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Comment on the proposed conservation of *Cylindrus* Fitzinger, 1833 (Mollusca, Gastropoda, HELICIDAE)

(Case 3683; see BZN 72: 269–273)

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Cylindrus was introduced by Fitzinger as new genus name for the Helicid snail species first described as *Pupa obtusa* by Draparnaud 1805. *Cylindrus* was then used in a number of publications and lists for the monotypic species *Cylindrus obtusus*. This combination was used in all important publications about the Alpine endemic *C. obtusus*. Furthermore, the name *Cylindrus* describes the shell form, one of the remarkable traits of this species, in a vivid way. On the other hand, as Gittenberger states, the senior synonyms *Cylindrus* Batsch, 1789, and *Cylindrus* Deshayes, 1824 are either not in correct or not in regular use. Besides, Puillandre et al. (2015) favour the use of *Cylinder* Montfort, 1810 for the respective *Conidae* species related to *Conus textile* Linnaeus, 1758. They declared, independently from the current application, that the names *Cylinder* Montfort, 1810 and *Cylindrus* Fitzinger, 1833 should be preserved to maintain stability in nomenclature. This implies that the use of *Cylindrus* Fitzinger, 1833 would also not affect the nomenclature of *Conidae*. We therefore support the application of Gittenberger to:

- (1) suppress all usages of the genus-group name *Cylindrus* before that of Fitzinger, 1833 for the purposes of both the Principle of Priority and the Principle of Homonymy;
- (2) suppress all usages of the genus-group name *Cylinder* before that of Montfort, 1810 for the purposes of both the Principle of Priority and the Principle of Homonymy;
- (3) suppress the genus-group name *Cochlopupa* Jan, 1830 for the purpose of the Principle of Priority;
- (4) place on the Official Index of Rejected and Invalid Generic Names in Zoology the following names:
 - (a) *Cylindrus* Batsch, 1789;
 - (b) *Cylindrus* Deshayes, 1824;
 - (c) *Cochlopupa* Jan, 1830.

Comment supporting the proposed conservation of *Cylindrus* Fitzinger, 1833 (Mollusca, Gastropoda, HELICIDAE)

(Case 3683; see BZN 72: 269–273)

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I fully agree with the argumentation expressed in Case 3683 to conserve the well-known generic name *Cylindrus*. It would be a systematic shock if we had to rename *Cylindrus* as *Cochlopupa*.

Comment on the conservation of *Cylindrus* Fitzinger, 1833 (Mollusca, Gastropoda, HELICIDAE)

(Case 3683; see BZN 72: 269–273)

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I fully support the request by Gittenberger & Bank (BZN 72: 269–273). In my European non-marine mollusc species identification guide (Welter-Schultes, 2012, p. 586) I listed both *Cylindrus* and *Cochlopupa* as candidate generic names for *Pupa obtusa* Draparnaud, 1805 and remarked that *Cylindrus* was preoccupied. Making use of a disclaimer I did not use either one of the two generic names as valid in the sense of the Glossary. I wrote ‘if nothing else interferes I would suggest using *Cochlopupa*’. The option proposed by Gittenberger & Bank to ask the Commission for a solution is better than my own proposal because the usage of *Cylindrus* is much more widespread and the request is in the sense of maintaining the stability of names. *Cylindrus obtusus* is a well-known species in Austria, often used in the literature. Gittenberger & Bank’s efforts in researching the situation in the marine group involved and for thoroughly checking out other possible circumstances should be acknowledged by approving their proposed solution.

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Welter-Schultes, F.W. 2012. *European non-marine molluscs, a guide for species identification*. A1–A3, 1–679, Q1–Q78 pp. Planet Poster Editions, Göttingen.

Statements of support for Case 3683 were also received from:

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Comment on the proposed the conservation of the name *Antheraea roylei* Moore, 1859 (Insecta, Lepidoptera, SATURNIIDAE)

(Case 3635; see BZN 70: 221–228; BZN 72: 57–60)

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The arguments and counter-arguments pertaining to this application focus on the debate as to whether *Antheraea pernyi* and *A. roylei* are distinct species or if *A. pernyi* was derived from *A. roylei* by sericultural selection, and therefore the two are biologically conspecific. However, if the two names do in fact represent separate species, which is the position of my colleagues Stefan Naumann and Wolfgang Nässig, then I would expect them to certainly support the application of Peigler & Chutia (2013) that the name *A. roylei* be conserved. Although I have argued, and will do so again below, that the two names refer to a single biological species, conserving the junior name would ensure that it can always be used by all authors, regardless of their viewpoint on this matter. If one is so certain that *A. roylei* is a species distinct from *A. pernyi*, then why would he or she object to conservation of the junior name *A. roylei*? Dr. Chutia and I were amiss in making this clear in our application. The following are my responses to the numbered points in the comments by Dr. Naumann.

3. In my earlier publication (Peigler, 2012), I outlined details pertaining to the geographical distributions of the two entities (names or species) that we call *roylei* and *pernyi*, and discussed the failure of feral populations of *pernyi* to persist. I agree with Naumann that climate zones would be a likely factor for the feral populations to eventually disappear. Bringing in names of other species or synonyms such as *korintjiana* and *lampei* from tropical Asia does not clarify any arguments, but I agree with Naumann that these belong to the *roylei* group. So what? The fact remains that all Chinese authors treat all specimens collected in China under the name *pernyi* and other authors reporting on material collected in Nepal, Vietnam, India, Bhutan, Thailand, West Malaysia, etc. call those specimens *roylei*. As I argued earlier (Peigler, 2012), the national borders cannot be a real line separating biogeographical zones, which can generally be considered north or south of the Himalayas. In fact, several saturniids and many insects and plants that are typically regarded as ‘sub-Himalayan,’ also turn up in Yunnan, Tibet, and other provinces in southern China (see Li et al., 2011). Manjeet Jolly was a leading sericulturist in India for many years, and there is no reason to doubt that he got his *pernyi* stock from China when he crossbred *pernyi* and *roylei* to produce his first lines of oak tasar (= temperate tasar) silkworm ‘hybrids’ (*proylei*). Moreover, if the *pernyi* material that Dr. Jolly first used really had been from India (therefore being *roylei*), why would the cocoons of the so-called hybrids resemble those of *pernyi* by being single-layered and with a large silk content? Furthermore, Jolly and others in India subsequently studied the chromosome numbers of Chinese *pernyi*, Indian *roylei*, and the *proylei* hybrid and accounted for the homologous pairings, as explained in my earlier paper (Peigler, 2012). The observation that the so-called hybrids between *pernyi* and *roylei* were fully fertile through multiple generations (implying they are the same species) is well documented, and the fact therefore well-supported. I do not believe that this argument for conspecificity can be effectively challenged.

4. I disagree that the phenotypic wing characters cited by Naumann are sufficient to define the two taxa. I stand by the statement in our original application (Peigler & Chutia, 2013) and earlier paper (Peigler, 2012) that the *roylei* phenotype falls within the wide variation we see among the more than 130 named strains of *pernyi*. For example, see the moths on pages 29 and 43 in the big book ‘The Records of Tussah Varieties in China,’ (SRIL 1996) and compare those to the *roylei* shown by Nässig et al. (1996, pl. 13, fig. 67) and Lampe (1985, pl. 6, figs. 3, 4). Li et al. (2011, pl. 55, fig. 2) figured a specimen of *roylei* from Guangdong with strongly produced forewing apices under the name *pernyi*. In Section 4, Naumann also alludes to differences separating the larvae and male genitalia, but does not specify what those might be. By contrast, I cited the pictorial table published by Jolly et al. (1979, fig. 78) that reveals the setal patterns of *pernyi* and *roylei* to be virtually identical, and the color images in Lampe (2010) showing larvae of *pernyi* and *roylei* to be identical.

5. Naumann lists several Chinese provinces that I had cited as records for *roylei* (Peigler, 2012). The specimens are in his collection and I got those records from him when he reviewed my manuscript, but now he considers them to represent *pernyi*. Furthermore, he says that wild records exist for far eastern Russia and the Korean peninsula, but fails to cite any specific data. I reviewed the Russian and Korean literature for *pernyi*, and concluded that those records were misidentifications for *A. yamamai* (Russia) or escapees from captive colonies of *pernyi* (Korea). I still do not believe that wild populations of *pernyi* exist in the Far East of Russia or in Korea or in fact anywhere in China. Naumann states that *roylei* is used in sericulture in India. Although this wild species has been investigated by several sericulture teams in Northeast India in recent years, it has never been mass reared for its silk, nor have its cocoons been mass collected for same.

7. Naumann challenges the taxonomic work of the early authors, such as Horsfield & Moore (1858–1859), Cotes & Swinhoe (1887), Hampson (1892), etc. As far as I can see, those workers identified and recorded *all* of the SATURNIIDAE correctly in their publications. They were some of the ones who named these species, or otherwise had access to the type specimens in London. Naumann’s suggestion that those identifications should now be suspect because DNA-barcoding was not used is unfair. I believe that DNA-barcoding should be used (and viewed) as one taxonomic tool among many, rather than trying to define species boundaries or hypothetical phylogenies based on a portion of a single mitochondrial gene. In fact, the above cited authors of the 1800s had correctly separated *Antheraea knyveti* from *A. roylei*, but it was only recently that Naumann realized that these two names refer to two species, after he, I, and many authors had incorrectly synonymized them.

8. My position remains unchanged that Mell (1939) in southern China and Sonan (1937) in Taiwan were in fact correct in their identifications of wild-collected moths as *roylei* instead of *pernyi*. It may be significant here that neither of those authors were Chinese, as it is clear that Chinese authors overwhelmingly call all wild-collected material from China by the name *pernyi*.

9. I do not think a taxonomic revision of the species-rich genus *Antheraea* will be necessary to resolve the question of whether *pernyi* and *roylei* are conspecific, although that is what it apparently took to resolve any doubt about the conspecificity of *Samia canningi* and *Samia ricini* (Peigler & Naumann, 2003).

14. I think the issue of *Antheraea assamensis* is different, because that sericulture is based on a species that is kept in the wild and is continually receiving genes from moths

in wild populations (Gogoi et al., 2014). By contrast, most of the sericulture of *pernyi* is in northeastern China where wild populations do not occur. Despite what Naumann believes about the northern limits of the range of *pernyi* or *roylei* in China, I was told by my hosts at the Tussah Sericultural Research Institute of Liaoning in 2008 that wild moths do not occur in that region. They would know.

One final argument I would like to record here is that Dr. Naumann is a leading authority on SATURNIIDAE with a lot of field experience in Asia, and his published work reflects high scientific integrity. Moreover, my impression of him over many years is that he has a good eye for species recognition. In spite of this, I respectfully disagree with him on this matter.

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Comment on the proposed conservation of *Tupinambus indicus* Daudin, 1832 (currently *Varanus indicus*; Reptilia, Squamata) by replacement of the neotype (Case 3676; see BZN 72: 134–140).

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We should like to comment on the proposal of Valter Weijola (Case 3676) to replace the neotype of *Tupinambus indicus* Daudin, 1802 as designated by Philipp et al. (1999).

1. The name *Tupinambus indicus* Daudin, 1802 (currently *Varanus indicus*) was described on the basis of an individual which has to be regarded as lost (e.g. Brygoo, 1987; Böhme et al., 1994; Philipp et al., 1999; de Lisle, 2009; Weijola, 2015). Subsequent discoveries of some closely related taxa (Böhme, 1991; Böhme et al., 1994; Böhme & Ziegler, 1997), i.e. *V. jobiensis* and *V. doreanus* (both raised from synonymy of *V. indicus*), *V. doreanus finschi* and *V. melinus* (described as new), already required diagnoses to separate them from Daudin's true *V. indicus*, involving a definition of what Daudin's (1802) species actually is. Apart from different scale counts, the new taxa were distinguished from *V. indicus* (as understood from the 1880s until today: e.g. Boulenger, 1885; De Rooij, 1915; Mertens, 1942, 1959, 1963; Bennett, 1995, 1997; De Lisle, 1996, 2009; Böhme, 1997, 2003; Ziegler & Böhme, 1997; King & Green, 1999; Pianka et al., 2004; Ziegler et al., 2007a; Eidenmüller, 2007; Eidenmüller & Philippen, 2008; Koch et al., 2010, 2013) by tail shape, head, body and tail colour pattern, tongue coloration as well as outer genital morphology, *V. indicus* being characterized by a light, unpatterned throat, the lack of a light temporal streak, an evenly distributed pattern of small yellow dorsal spots, an entirely dark blue to blackish tongue and only unilaterally developed hemipenial paryphasma ornamentation. As can be seen from the titles of these references, they mostly refer to widely distributed, important key publications on monitor lizards including their systematics.

2. The continuing discovery of new species from the close relationship of *V. indicus* (see next paragraph) made it necessary to define the phenotypic identity of Daudin's (1802) name by the designation of a real neotype specimen. This has been done by Philipp et al. (1999), and their two main criteria for a correct and suitable decision according to the requirements of Article 75.3 were the originally published type locality 'L'Île d'Amboine' (= Ambon Is., Moluccas, Indonesia) and Daudin's (1802) original figure accompanying his description and denomination serving as an 'iconotype', i.e. the image of a lost holotype. A presumed suitable neotype specimen, a juvenile, was traced in

the Zoological Museum, University of Amsterdam (ZMA), which was labelled as to stem from the Moluccan island of Ambon. It was accompanied by three more juvenile Pacific monitor lizards in the same jar, however, two of them differed from the selected neotype (which subsequently went to ZFMK by exchange: Böhme, 2014) while the third specimen (kept by ZMA) agreed with it. One important argument for selecting ZFMK (ex-ZMA) 70650 for neotype designation was that it definitely lacks a light temporal stripe, as does the figure in Daudin's (1802) original description.

3. According to this concept of the species *V. indicus* (Daudin, 1802), i.e. also according to the neotype designation by Philipp et al. (1999), additional new species of the *V. indicus* species group have been described and diagnosed: *V. caerulivirens*, *V. cerambonensis*, *V. juxtindicus*, *V. lirungensis*, *V. obor*, *V. rainerguentheri*, *V. yuwonoi*, and *V. zugorum* (see Harvey & Barker, 1998; Ziegler et al., 1999, 2007; Böhme et al. 2002; Böhme & Ziegler, 2005, Ziegler et al., 2007 b, Koch et al., 2009, Weijola & Sweet, 2010).

4. The careful historical research done by Weijola (2015) as to the possible fate of Daudin's (1802) type specimen and to the origin of the ZMA vouchers (including the ZFMK neotype) which seemed to document the sympatric occurrence of two species of the *V. indicus* group on the island of Ambon is appreciated, but we cannot follow his conclusions:

(1) The fact that he and other researchers (Weijola & Sweet, 2015; Weijola, 2015 and sources cited therein) only found one species of monitor lizard on Ambon Is. is not a definite proof of the absence of a second one, since the presence of a species in a particular area is always much easier to demonstrate than its absence. Moreover, a former and now vanished occurrence or a passively translocated specimen from elsewhere could be at least theoretically responsible for a former record not documentable today.

(2) There are several instances of sympatric occurrences of two or more species of the *V. indicus* group known, most impressive being the presence of four species on the Moluccan island of Halmahera (*V. caerulivirens*, *V. rainerguentheri*, *V. yuwonoi* and *V. zugorum*).

5. But even if Weijola & Sweet (2015) and Weijola (2015) are right that there is only one species (*V. cerambonensis*) of the *Varanus indicus* group on Ambon (and also on Seram, Buru and Saparua) and that the locality of the neotype is not Ambon, why propose a new neotype to revive a name (*V. chlorostigma*) that has not been in use for a valid taxon since the 1880s? Here, Weijola's (2015) title already sounds misleading: the formulation 'proposed conservation of usage' refers at best to the time before 1885 and ignores common usage from 1885 to the present. If, as expressly admitted by Weijola (2015), all characters of the current neotype agree with mangrove monitor lizard populations from northern and western New Guinea, a much easier solution is offered by the Code (Article 76, Recommendation 76A.2.): 'A statement of a type locality' (– here the locality of the neotype –) 'that is found to be erroneous should be corrected'. So if the current neotype is – by a correction of its presumed wrong locality – regarded to stem originally from the area of northern and western New Guinea, the same applies to Daudin's (1802) 'iconotype', i.e. the figured (though lost) holotype which also could not stem from Ambon due to its dorsal colour pattern and the lacking temporal stripe which is inconsistent with the new neotype proposed by Weijola.

6. The wording of the abstract of Weijola's (2015) application is misleading in several respects: The 'recent' choice (i.e. no less than 16 years ago) of the neotype by Philipp et al. (1999) has not resulted in a shift of the nomen *indicus* Daudin, 1802 to a different

species of *Varanus*, i.e. *V. chlorostigma* (Gray, 1831) since the latter was in use only from 1831 to 1885. Since then it has been considered a junior synonym of Daudin's species name *indicus*. The description of the presumed second species from Ambon, vouchered among others by the two seemingly sympatric juveniles in the same jar at ZMA and by additional specimens from Seram, resulted in the description of a second species, i.e. *V. cerambonensis* 'Philipp, Bohme & Zeigler 1999' (correctly Philipp, Böhme & Ziegler, 1999). So, if the above arguments are acceptable, the latter species is by no means unnecessary' as claimed by Weijola (2015). It has been accepted by many authors and is accordingly listed in several general works on monitor lizards (see the references listed in paragraph 1 above). The same is true for *V. indicus* in the sense of Philipp et al. (1999). Since it was always (and still is) the most widely distributed species of its group, it also gave its name to the so-called *Varanus indicus* species group, a term very often used for this clade within the current subgenus *V. (Euprepiosaurus)*, not only in taxonomic but also in more general references on monitor lizards. It would be confusing if this nomen now referred to a restrictively distributed southern Moluccan species, or changed to a completely unfamiliar *V. chlorostigma* group.

7. Monitor lizards are not just a taxonomic group suitable as a toy for taxonomists, but a group of lizards which suffer from high commercial exploitation and which includes many species of the *V. indicus* group (Koch et al., 2013) so that they merit high conservation priority. Since not only herpetological taxonomists are involved, but also ecologists, conservationists as well as national and international custom and conservation authorities, nomenclatural universality and stability should receive the highest possible priority. It may be noted that the checklist by Böhme (2003), although out of date today (see update by Koch et al., 2010), was compiled on request of the CITES Taxonomic Committee in Switzerland as the official CITES reference for supporting stability, applicability and universality of names. By no means is stability supported and confusion avoided if a name which was not in use for 130 years is raised to validity again – with no necessity and no heuristic effect, just an exchange of names. Rather, it would support taxonomic confusion and instability, in particular as Weijola's proposed new neotype is not in accord with Daudin's (1802) 'iconotype' in important diagnostic characters such as the presence of a light temporal stripe (absent in the 'iconotype') and the presence of oblique rows of dorsal ocelli (absent in Daudin's figured specimen).

8. In summary, we strongly suggest that the neotype designation by Philipp et al. (1999) should be maintained but, in recognition of Weijola's historical research on the erroneous type locality Ambon, we propose to correct the latter according to Article 76 (Recommendation 76A) for Daudin's 'iconotype' and consequently also for the current neotype to 'northwestern New Guinea' which fits the characters of those populations as also argued by Weijola (see above) and at the same time provides the stability of the nomen *V. indicus* (Daudin, 1802) for the widespread species of mangrove monitor lizards as understood in all major references on this group of varanids in the last 130 years.

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**Comments on the proposed suppression *Kinosternon chimalhuaca* Rogner, 1996
(Reptilia, Testudines)**

(Case 3625; see BZN 70: 190–192)

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Hereby we present new proposals for Case 3625. We suggest that Rogner's (1996) name be suppressed, so the authorship goes to Berry et al., 1997.

The International Commission on Zoological Nomenclature is accordingly asked:

- (1) to use its plenary power to suppress the name *chimalhuaca* Rogner, 1996, as published in the binomen *Kinosternon chimalhuaca*, for the purposes of both the Principle of Priority and the Principle of Homonymy;
- (2) to place on the Official List of Specific Names in Zoology the name *chimalhuaca* Berry, Seidel, & Iverson, 1997, as published in the binomen *Kinosternon chimalhuaca*;
- (3) to place on the Official Index of Rejected and Invalid Specific Names in Zoology the name *chimalhuaca* Rogner, 1996, as suppressed in (1) above.

References

- Berry, J.F., Seidel, M.E. & Iverson, J.B. 1997. A new species of mud turtle (genus *Kinosternon*) from Jalisco and Colima, Mexico, with notes on its natural history. *Chelonian Conservation and Biology*, 2(3): 329–337.
- Bonin, F., Devaux, B. & Dupré, A. 2006. *Turtles of the world*. 416 pp. Johns Hopkins University Press, Baltimore, Maryland, U.S.A.
- Fritz, U. & Havas, P. 2007. Checklist of Chelonians of the world. *Vertebrate Zoology*, 57(2), 149–368.
- Rogner, M. 1996. *Schildkröten*. 265 pp., [44] pp. of plates. Heidi Rogner-Verlag, Hürtgenwald, Germany.

TTWG (Turtle Taxonomy Working Group: van Dijk, P.P., Iverson, J.B., Shaffer, H.B., Bour, R. & Rhodin, A.G.J.). 2012. Turtles of the World: 2012 update. Annotated checklist of taxonomy, synonymy, distribution, and conservation status. Pp. 0.243–0.328, *in* Rhodin, A.G.J., Pritchard, P.C.H., van Dijk, P.P., Saumure, R.A., Buhlmann, K.A., Iverson, J.B. & Mittermeier, R.A. (Eds.), *Conservation Biology of freshwater turtles and tortoises*. Chelonian Research Monographs 5.

Acknowledgement of receipt of this application was published in BZN **70**: 70.

Comments on this case are invited for publication (subject to editing) in the *Bulletin*; they should be sent to the Executive Secretary, I.C.Z.N., Natural History Museum, Cromwell Road, London SW7 5BD, U.K. (e-mail: iczn@nhm.ac.uk).

OPINION 2375 (Case 3639)

***Krynickillus maculatus* Kaleniczenko, 1851 (currently *Limax maculatus*; Gastropoda, Stylommatophora, LIMACIDAE): specific name conserved**

Abstract. Under the plenary power the Commission has conserved the specific name of the terrestrial slug *Krynickillus maculatus* Kaleniczenko, 1851 (currently *Limax maculatus* or *Limacus maculatus*, LIMACIDAE) by suppression of its little-used senior homonyms *Limax maculatus* Nunneley, 1837 and *Limax cinereus* var. *maculatus* Picard, 1840.

Keywords. Nomenclature; taxonomy; Gastropoda; Stylommatophora; LIMACIDAE; *Limax*; *Limax maculatus*; *Krynickillus maculatus*; *Limacus maculatus*; terrestrial slug; Europe.

Ruling

- (1) Under the plenary power, the following names are suppressed for the purposes of both the Principle of Priority and the Principle of Homonymy:
 - (a) *maculatus* Nunneley, 1837, as published in the binomen *Limax maculatus*;
 - (b) *maculatus* Picard, 1840, as published in the combination *Limax cinereus* var. *maculatus*;
- (2) The name *maculatus* Kaleniczenko, 1851, as published in the binomen *Krynickillus maculatus* is hereby placed on the Official List of Specific Names in Zoology.
- (3) The following names are hereby placed on the Official Index of Rejected and Invalid Specific Names in Zoology:
 - (a) *maculatus* Nunneley, 1837, as published in the binomen *Limax maculatus* and as suppressed in (1)(a) above;
 - (b) *maculatus* Picard, 1840, as published in the combination *Limax cinereus* var. *maculatus* and as suppressed in (1)(b) above.

History of Case 3639

An application to conserve the specific name of the terrestrial slug *Krynickillus maculatus* Kaleniczenko, 1851 was received from Igor Balashov (*Schmalhausen Institute of Zoology, National Academy of Sciences of Ukraine, Kiev, Ukraine*) on 11 September 2013. After correspondence the Case was published in BZN 70: 218–220 (December 2013). The title, abstract and keywords of the Case were published on the Commission's website. A comment on this Case was published in BZN 71: 26 (March 2014). The Case was sent for vote on 1 June 2015. A greater than two-thirds majority of Commissioners voted FOR the Case (19 For, 1 Against).

Decision of the Commission

At the close of the voting period on 1 September 2015 the votes were as follows:

Affirmative votes – 19: Alonso-Zarazaga, Ballerio, Bogutskaya, Bouchet, Brothers, Grygier, Halliday, Harvey, Kojima, Kottelat, Krell, Kullander, Lamas, Rosenberg, Štys, van Tol, Winston, Yanega, and Zhou.

Negative votes – 1: Pape.

Fautin, Ng, Patterson, Pyle and Zhang were on leave of absence.

Voting FOR, Grygier said that instability in the specific name is due to instability in the generic classification, and the proposals would fix the specific name so it does not depend on the classification. Also voting FOR, Kullander said that the homonymy had been already resolved under the Code by Wiktor, 2001 and consequently, the matter should not be further complicated by an adverse Commission ruling.

Original references

The following are the original references to the entries on either an Official List or an Index in the ruling given in the present Opinion:

maculatus, *Krynockillus*, Kaleniczenko, 1851, *Bulletin de la Société Impériale des Naturalistes de Moscou*, **24**(1): 226.

maculatus, *Limax*, Nunneley, 1837, *Transactions of the Philosophical and Literary Society of Leeds*, **1**: 46.

maculatus, *Limax*, Picard, 1840, *Bulletin de la Société Linnéenne du Nord de la France*, **1**(1): 165.

OPINION 2376 (Case 3638)***Saturnia canningi* Hutton, 1859 (currently *Samia canningi*; Insecta, Lepidoptera, SATURNIIDAE): name conserved**

Abstract. Under the plenary power the Commission has conserved the specific name of *Saturnia canningi* Hutton, 1859, the progenitor of *Samia ricini* (Jones, 1791). Both names have been used widely and consistently by authors in the entomological and sericultural literature for over 150 years to refer to the wild and domesticated entities, respectively. The name *Saturnia canningi* has been added to the Official List of Specific Names in Zoology, and can continue to be used when referring to the wild form.

Keywords. Nomenclature; taxonomy; *Samia*; *Samia canningi*; *Samia ricini*; eri silk; eri silkmoth; India; wild silk.

Ruling

- (1) Under the plenary power it is hereby ruled that the name *canningi* Hutton, 1859, as published in the binomen *Saturnia canningi*, is not invalid by reason of being pre-dated by a name based on a domestic form, *Phalaena ricini* Jones, 1791, whenever the two names are considered to be synonyms;
- (2) The following names are hereby placed on the Official List of Specific Names in Zoology:
 - (a) *canningi* Hutton, 1859, as published in the binomen *Saturnia canningi*, with the endorsement that it is not invalid by reason of being pre-dated by a name based on a domestic form;
 - (b) *ricini* Jones in Anderson, 1791, as published in the binomen *Phalaena ricini*.

History of Case 3638

An application to conserve the specific name *Saturnia canningi* Hutton, 1859 for the wild form of the eri silk moth was received from Richard S. Peigler (*Department of Biology, University of the Incarnate Word, San Antonio, Texas, U.S.A.*) and Reeta Luikham (*Regional Tasar Research Station, Central Silk Board, Mantripukhri, Manipur, India*) on 24 July 2013. After correspondence the Case was published in BZN 70: 229–233 (December 2013). The title, abstract and keywords of the Case were published on the Commission's website. Comments on this Case were published in BZN 72: 56 (March 2015). The Case was sent for vote on 1 September 2015. A greater than two-thirds majority of Commissioners voted FOR the Case (18 For, 2 Against, 1 Split).

Decision of the Commission

At the close of the voting period on 1 December 2015 the votes were as follows:

Affirmative votes – 18: Ballerio, Bouchet, Brothers, Grygier, Halliday, Harvey, Kojima, Kottelat, Krell, Kullander, Lamas, Pape, Pyle, Rosenberg, van Tol, Winston, Yanega, and Zhou.

Negative votes – 2: Alonso-Zarazaga and Zhang
 Fautin, Ng, Patterson and Štys were on leave of absence.
 Split votes – 1: Bogutskaya (Abstain (1), For (2))

Voting FOR, Kojima said that as this proposal includes a taxonomic aspect, namely, whether *Samia canningi* (Hutton, 1859) and *Samia ricini* (Jones, 1791) are different species or synonyms, the following phrase should be added at the end of Para 9 (1): ‘*Phalaena ricini* Jones, 1791 whenever the two names are considered to be synonyms’. Also voting FOR, Winston said that the wild and domesticated species were clearly distinct, and even within the domesticated form, molecular genetic studies had shown different populations that represented different ecotypes that should be conserved to preserve genetic diversity. Still, as has happened with other wild and domesticated taxa, it was wise to rule on the conservation of both names, she added.

SPLITTING her vote, Bogutskaya said that she saw an internal conflict of logic in that the Commission was asked to rule that the name *canningi* Hutton, 1859 . . . is not invalid = the name *canningi* is valid = the name *canningi* has precedence over *ricini* and is the only name applied for the species (though it includes two forms). But this is not what the author actually asked for. She thought that the Case was taxonomic rather than nomenclatural as the eri silk community just needed to accept that there were two species instead of one and use both valid names.

Voting AGAINST, Alonso-Zarazaga said that according to the Code, one species must have one valid name only. If the authors think that the wild form of *Samia ricini* (Jones in Anderson, 1791) merited a special name, they could use a non-Linnean, genetic term: ‘phenotype *canningi*’, without authorship and date. He noted that phenotypes could also be easily differentiated within the same species, so this was not a weighty reason to support this application.

Original references

The following are the original references to the entries on an Official List in the ruling given in the present Opinion:

- canningi* Hutton, 1859, Notes on the silkworms of India. *Journal of the Agricultural and Horticultural Society of India*, **11**(1): 28.
- ricini* Jones in Anderson, 1791, *Correspondence for the introduction of cochineal insects from America, the varnish and tallow trees from China, the discovery and culture of white lac, the culture of red lac, and also for the introduction, culture, and establishment of mulberry trees and silk worms, with a description and drawing of an improved Piemontese reel for the manufacture of raw silk, together with the culture of the finest cinnamon trees of Ceylon, indigo and some other valuable articles*. Joseph Martin, Madras, p. 43.

OPINION 2377 (Case 3624)**A proposal for the rejection of 38 names in ANTHICIDAE (Coleoptera): approved**

Abstract. Under the plenary and specific powers the Commission has confirmed the unavailability of 23 names published by Marseul in 1879, one name published by Pic in 1892, one name attributed to Pic in 1911 and one name used by Krekich-Strassoldo in 1919. These names were incorrectly used by Chandler, Nardi & Telnov in 2004, in place of the correct names that had been proposed by Pic and Sahlberg. The name *Clavicomus* Pic, 1894 is given precedence over *Pseudantichus* Desbrochers des Loges, 1868 whenever the two are considered to be synonyms.

Keywords. Nomenclature; taxonomy; Insecta; Coleoptera; ANTHICIDAE; ant-like flower beetles.

Ruling

- (1) Under the specific powers the names *Ephippicolles*, *Stenicolles* (p. 65), *Sulcicolles*, *Recticolles*, *Lagenicolles*, *Bitumicolles*, *Trapezicolles*, *Cordicolles*, *Stricticolles*, *Clavicolles* (p. 66), *Hirticolles*, *Brevicolles*, *Tenuicolles*, *Pubicolles*, *Birricolles*, *Rotundicolles*, *Laticolles*, *Fossicolles*, *Monstrosipedes* (p. 67), *Normalipedes*, *Biparticolles* (p. 68), *Bifossicolles* (p. 187) and *Biscissicolles* (p. 230), all of Marseul (1879), the names *Curticolles* Pic (1892, p. 44) and *Spiniferes* Pic (1911, p. 33) and the name *Spinicornes* Krekich-Strassoldo (1919, p. 65), are confirmed to be unavailable under Articles 11.8 and 11.8.1 of the Code and ruled not to be emended to make them available.
- (2) Under the plenary power the name *Clavicomus* Pic, 1894 is given precedence over *Pseudantichus* Desbrochers des Loges, 1868, whenever the two are considered to be synonyms.
- (3) The following names are hereby placed on the Official List of Generic Names in Zoology:
 - (a) *Anthicus* Paykull, 1798 (gender: masculine), type species by subsequent designation by Westwood (1830) *Meloe antherinus* Linnaeus, 1760, type genus of the family ANTHICIDAE;
 - (b) *Bifossicollis* Sahlberg, 1903 (gender: masculine), type species by monotypy *Anthicus iscarיותes* LaFerté-Sénectère, 1849;
 - (c) *Birricomus* Pic, 1894 (gender: masculine), type species by subsequent designation by Chandler et al. (2008) *Anthicus genei* LaFerté-Sénectère, 1849;
 - (d) *Clavicomus* Pic, 1894 (gender: masculine), type species by subsequent designation by Bucciarelli (1980) *Anthicus longiceps* LaFerté-Sénectère, 1849, with the endorsement that it is to be given precedence over *Pseudantichus* Desbrochers des Loges, 1868, whenever they are considered to be synonyms as ruled in (2) above;
 - (e) *Cordicomus* Pic, 1894 (gender: masculine), type species by subsequent designation by Bonadona (1958) *Anthicus instabilis* Schmidt, 1842;

- (f) *Curticomus* Pic, 1894 (gender: masculine), type species by monotypy *Anthicus trotommidens* Pic, 1892;
 - (g) *Cyclodinus* Mulsant & Rey, 1866 (gender: masculine), type species by subsequent designation by Bonadona (1949) *Anthicus humilis* Germar, 1824;
 - (h) *Hirticomus* Pic, 1894 (gender: masculine), type species by subsequent designation by Bonadona (1958) *Notoxus hispidus* Rossi, 1792;
 - (i) *Microhoria* Chevrolat, 1877 (gender: feminine), type species by subsequent designation by Bonadona (1952) *Anthicus oedipus* Chevrolat, 1860;
 - (j) *Pseudantichus* Desbrochers des Loges, 1868 (gender: masculine), type species by monotypy *Formicomus oliverii* Desbrochers des Loges, 1868, with the endorsement that it is not to be given priority over *Clavicomus* Pic, 1894, whenever they are considered to be synonyms, as ruled in (2) above;
 - (k) *Pubicomus* Pic, 1894 (gender: masculine), type species by subsequent designation by Chandler et al. (2008) *Anthicus axillaris* Schmidt, 1842;
 - (l) *Stricticomus* Pic, 1894 (gender: masculine), type species by subsequent designation by Bonadona (1958) *Anthicus transversalis* A. Villa & G.B. Villa, 1833;
 - (m) *Tenuicomus* Pic, 1894 (gender: masculine), type species by subsequent designation by Alonso-Zarazaga (2013) *Anthicus pumilus* Baudi, 1877;
 - (n) *Trapezicomus* Pic, 1894 (gender: masculine), type species by type species by subsequent designation by Alonso-Zarazaga (2013) *Anthicus rufivestis* Marseul, 1879.
- (4) The following names are hereby placed on the Official List of Specific Names in Zoology:
- (a) *antherinus* Linnaeus, 1760, as published in the binomen *Meloe antherinus* (specific name of the type species of *Anthicus* Paykull, 1798);
 - (b) *axillaris* Schmidt, 1842, as published in the binomen *Anthicus axillaris* (specific name of the type species of *Pubicomus* Pic, 1894);
 - (c) *genei* LaFerté-Sénectère, 1849, as published in the binomen *Anthicus genei* (specific name of the type species of *Birricomus* Pic, 1894);
 - (d) *hispidus* Rossi, 1792, as published in the binomen *Notoxus hispidus* (specific name of the type species of *Hirticomus* Pic, 1894);
 - (e) *humilis* Germar, 1824, as published in the binomen *Anthicus humilis* (specific name of the type species of *Cyclodinus* Mulsant & Rey, 1866);
 - (f) *instabilis* Schmidt, 1842, as published in the binomen *Anthicus instabilis* (specific name of the type species of *Cordicomus* Pic, 1894);
 - (g) *iscariotes* LaFerté-Sénectère, 1849, as published in the binomen *Anthicus iscariotes* (specific name of the type species of *Bifossicollis* Sahlberg, 1903);
 - (h) *longiceps* LaFerté-Sénectère, 1849, as published in the binomen *Anthicus longiceps* (specific name of the type species of *Clavicomus* Pic, 1894);
 - (i) *oedipus* Chevrolat, 1860, as published in the binomen *Anthicus Oedipus* (specific name of the type species of *Microhoria* Chevrolat, 1877);
 - (j) *oliverii* Desbrochers des Loges, 1868, as published in the binomen *Formicomus oliverii* (specific name of the type species of *Pseudantichus* Desbrochers des Loges, 1868);
 - (k) *pumilus* Baudi, 1877, as published in the binomen *Anthicus pumilus* (specific name of the type species of *Tenuicomus* Pic, 1894);

- (l) *rufivestis* Marseul, 1879, as published in the binomen *Anthicus rufivestis* (specific name of the type species of *Trapezicomus* Pic, 1894);
- (m) *transversalis* A. Villa & G.B. Villa, 1833, as published in the binomen *Anthicus transversalis* (specific name of the type species of *Stricticomus* Pic, 1894);
- (n) *trotommidens* Pic, 1892, as published in the binomen *Anthicus trotommidens* (specific name of the type species of *Curticomus* Pic, 1894);
- (5) The following names are hereby placed on the Official Index of Rejected and Invalid Generic Names in Zoology:
 - (a) *Birricollis* Sahlberg, 1903, junior objective synonym of *Birricomus* Pic, 1894;
 - (b) *Brevicomus* Pic, 1894, junior objective synonym of *Anthicus* Paykull, 1798;
 - (c) *Brevicollis* Sahlberg, 1903, junior objective synonym of *Anthicus* Paykull, 1798;
 - (d) *Clavicollis* Sahlberg, 1903, junior objective synonym of *Pseudantichus* Desbrochers des Loges, 1868;
 - (e) *Cordicollis* Sahlberg, 1903, junior objective synonym of *Cordicomus* Pic, 1894;
 - (f) *Hirticollis* Sahlberg, 1903, junior objective synonym of *Hirticomus* Pic, 1894;
 - (g) *Lagenicollis* Sahlberg, 1903, junior objective synonym of *Cyclodinus* Mulsant & Rey, 1866;
 - (h) *Laticomus* Pic, 1894, junior objective synonym of *Eonius* C.G. Thomson, 1859;
 - (i) *Pubicollis* Sahlberg, 1903, junior objective synonym of *Pubicomus* Pic, 1894;
 - (j) *Stricticollis* Sahlberg, 1903, junior objective synonym of *Stricticomus* Pic, 1894;
 - (k) *Tenuicollis* Sahlberg, 1903, junior objective synonym of *Tenuicomus* Pic, 1894;
 - (l) *Trapezicollis* Sahlberg, 1903, junior objective synonym of *Trapezicomus* Pic, 1894.

History of Case 3624

An application to confirm the unavailability of 23 names published by Marseul in 1879, one name published by Pic in 1892, one name attributed to Pic in 1911 and one name used by Krekich-Strassoldo, 1919, was received from Miguel A. Alonso-Zarazaga (*Departamento de Biodiversidad y Biología Evolutiva, Museo Nacional de Ciencias Naturales (CSIC), Madrid, Spain*) on 19 April 2013. After correspondence the Case was published in BZN 70: 171–184 (September 2013). The title, abstract and keywords of the Case were published on the Commission's website. No comments were received on this Case. The Case was sent for vote on 1 June 2015. A greater than two-thirds majority of Commissioners voted FOR the Case (20 For, 0 Against, 1 Split).

Decision of the Commission

At the close of the voting period on 1 September 2015 the votes were as follows:

Affirmative votes – 20: Alonso-Zarazaga, Ballerio, Bogutskaya, Bouchet, Brothers, Halliday, Harvey, Kojima, Kottelat, Krell, Kullander, Lamas, Pape, Rosenberg, Štys, van Tol, Winston, Yanega, and Zhou.

Negative votes – none.

Grygier split his vote (FOR (1), (2), (3), (5); AGAINST (4)).

Fautin, Ng, Patterson, Pyle and Zhang were on leave of absence.

SPLITTING his vote, Grygier said that the Case made no request for any ruling concerning the type species designations for the genus-group names with which it is truly

concerned, nor did it request any ruling concerning any of the listed specific names per se, so it is therefore unclear, under the specifications provided in Article 78.4.2, why these specific names should be entered into the Official List.

Original references

The following are the original references to the entries on either an Official List or Official Index in the ruling given in the present Opinion:

- Anthicus* Paykull, 1798, *Fauna Svecica, Insecta*, vol. 1 Joh. F. Edman, Upsaliae, p. 253.
- Bifossicollis* Sahlberg, 1903, *Öfversigt af Finska Vetenskaps-Societetens Förhandlingar*, **45A**(18) [1902–1903]: 31.
- Birricomus* Pic, 1894, *Revue scientifique du Bourbonnais et du Centre de France*, **7**(74): 41, 43, **7**(75): 79.
- Clavicomus* Pic, 1894, *Revue scientifique du Bourbonnais et du Centre de France*, **7**(74): 42.
- Cordicomus* Pic, 1894, *Revue scientifique du Bourbonnais et du Centre de France*, **7**(74): 45.
- Curticomus* Pic, 1894, *Revue scientifique du Bourbonnais et du Centre de France*, **7**(74): 41.
- Cyclodinus* Mulsant & Rey, 1866, *Histoire naturelle des coléoptères de France. Vol. 17. Colligères*, F. Savy, Paris, p. 77.
- Hirticomus* Pic, 1894, *Revue scientifique du Bourbonnais et du Centre de France*, **7**(74): 41.
- Microhoria* Chevrolat, 1877, *Annales de la Société entomologique de France*, (5)**7**(2): 168.
- Pseudantichus* Desbrochers des Loges, 1868, *Bulletin de l'Académie d'Hippone*, **4** (1865): 31;
- Pubicomus* Pic, 1894, *Revue scientifique du Bourbonnais et du Centre de France*, **7**(74): 42;
- Stricticomus* Pic, 1894, *Revue scientifique du Bourbonnais et du Centre de France*, **7**(74): 42; **7**(75): 70.
- Tenuicomus* Pic, 1894, *Revue scientifique du Bourbonnais et du Centre de France*, **7**(74): 42.
- Trapezicomus* Pic, 1894, *Revue scientifique du Bourbonnais et du Centre de France*, **7**(74): 42, 45.
- antherinus*, *Meloe*, Linnaeus, 1760, *Fauna Suecica sistens animalia Sueciae regni. Editio altera, auctiora*, Laurentii Salvii, Stockholmiae, “1761”, p. 228.
- axillaris*, *Anthicus*, Schmidt, 1842, *Entomologische Zeitung herausgegeben von dem Entomologischen Vereine zu Stettin*, **3**: 186.
- genei*, *Anthicus*, LaFerté-Sénéctère, 1849, in Guérin-Ménéville, F.E. (ed.) *Species et iconographie générique des animaux articulés ou représentation des genres, avec leur description et celle de toutes les espèces de cette grande division du règne animal. Première Partie: Insectes Coléoptères*. (1846–1847). Paris: de Fain et Thunot. Livraison 8 (No. 29, *Anthicus* (Troisième Division), pp. 85–132, 1 pl.), p. 120.
- hispidus*, *Notoxus*, Rossi, 1792, *Mantissa insectorum, exhibens species nuper in Etruria*. Ex typ. Polloni, Pisis, p. 46.
- humilis*, *Anthicus*, Germar, 1824, *Faunae Insectorum Europae. Fasciculus 10*. Halae, Car. Aug. Kummelii, p. 6.
- instabilis*, *Anthicus*, Schmidt, 1842, *Entomologische Zeitung Herausgegeben von dem Entomologischen Vereine Zu Stettin*, **3**: 184.
- iscariotes* *Anthicus*, LaFerté-Sénéctère, 1849, *Monographie des Anthicus et genres voisins, Coléoptères hétéromeres de la tribu des Trachélides*. [1848]. Author, Paris, p. 301.
- longiceps*, *Anthicus*, LaFerté-Sénéctère, 1849, in Guérin-Ménéville, F. E. (Ed.), *Species et iconographie générique des animaux articulés ou représentation des genres, avec leur description et celle de toutes les espèces de cette grande division du règne animal. Première Partie: Insectes Coléoptères*. (1846–1847). Paris: de Fain et Thunot. Livraison 9 (*Anthicus* (Quatrième Division), pp. 133–181, 1 pl.), p. 134.
- oedipus*, *Anthicus*, Chevrolat, 1860, *Revue et Magasin de Zoologie Pure et Appliquée*, (2)**12**: 210.
- oliverii* *Formicomus* Desbrochers des Loges, 1868, *Bulletin de l'Académie d'Hippone*, **4**(1865): 79;
- pumilus*, *Anthicus*, Baudi, 1877, *Atti della Reale Accademia delle Scienze di Torino*, **12**: 702.
- rufivestis*, *Anthicus*, Marseul, 1879, *L'Abeille, Journal d'Entomologie*, **17**: 108 (spec. pag.)
- transversalis*, *Anthicus* A. Villa & G.B. Villa, 1833, *Coleoptera Europae dupleta in Collectione Villa quae pro mutua commutatione offerri possunt*, Mediolani, Authors, p. 35.
- trotommidens*, *Anthicus*, Pic, 1892, *Miscellanea Entomologica*, **1**(7): 44.

- Birricollis* Sahlberg, 1903, *Öfversigt af Finska Vetenskaps-Societetens Förhandlingar*, **45A**(11) [1902–1903], p. 67.
- Brevicomus* Pic, 1894, *Revue scientifique du Bourbonnais et du Centre de France*, **7**(74): 46.
- Brevicollis* Sahlberg, 1903, *Öfversigt af Finska Vetenskaps-Societetens Förhandlingar*, **45A**(11) [1902–1903], p. 67.
- Clavicollis* Sahlberg, 1903d, *Öfversigt af Finska Vetenskaps-Societetens Förhandlingar*, **45A**(19) [1902–1903]: 55.
- Cordicollis* Sahlberg, 1903, *Öfversigt af Finska Vetenskaps-Societetens Förhandlingar*, **45A**(11) [1902–1903]: 67.
- Hirticollis* Sahlberg, 1903, *Öfversigt af Finska Vetenskaps-Societetens Förhandlingar*, **45A**(11) [1902–1903]: 67.
- Lagenicollis* Sahlberg, 1903, *Öfversigt af Finska Vetenskaps-Societetens Förhandlingar*, **45A**(11) [1902–1903]: 66.
- Laticomus* Pic, 1894, *Revue scientifique du Bourbonnais et du Centre de France*, **7**(74): 41.
- Pubicollis* Sahlberg, 1903, *Öfversigt af Finska Vetenskaps-Societetens Förhandlingar*, **45A**(12) [1902–1903]: 9.
- Stricticollis* Sahlberg, 1903, *Öfversigt af Finska Vetenskaps-Societetens Förhandlingar*, **45A**(11) [1902–1903]: 66.
- Tenuicollis* Sahlberg, 1903, *Öfversigt af Finska Vetenskaps-Societetens Förhandlingar*, **45A**(19) [1902–1903]: 56.
- Trapezicollis* Sahlberg, 1903, *Öfversigt af Finska Vetenskaps-Societetens Förhandlingar*, **45A**(11) [1902–1903]: 67.

OPINION 2378 (Case 3632)***Anathyris monstrum* Khalfin, 1933 (currently *Anathyrella monstrum*; Brachiopoda, Athyridida): specific name conserved**

Abstract. Under the plenary power the Commission has conserved the specific name of the widely cited fossil brachiopod *Anathyris monstrum* Khalfin, 1933 by ruling that the two unused ‘varietal’ names, which together ambiguously comprised the species, are unavailable from their original descriptions in Khalfin (1933). In addition, the Commission has confirmed the conditionally proposed lectotype designation for *Anathyris monstrum*.

Keywords. Nomenclature; taxonomy; Brachiopoda; Rhynchonellata; Athyridida; *Anathyris*; *Anathyrella*; *Anathyrella monstrum*; *Anathyrella monstrum rotundata*; *Anathyrella monstrum mucronata*; Russia; Solomino Horizon; uppermost Frasnian.

Ruling

- (1) Under the plenary power the names *rotundata* Khalfin, 1933 and *mucronata* Khalfin, 1933, as published in the binomina *Anathyris monstrum* var. *rotundata* and *Anathyris monstrum* var. *mucronata*, are not available from Khalfin (1933a).
- (2) The name *monstrum* Khalfin, 1933, as published in the binomen *Anathyris monstrum*, is hereby placed on the Official List of Specific Names in Zoology.
- (3) In addition, the Commission hereby approves the designation of the specimen figured by Khalfin (1933a, pl. 6, fig. 1a–d) as the lectotype of *Anathyris monstrum*, under the specific powers.

History of Case 3632

An application to conserve the name of the widely cited fossil brachiopod *Anathyris monstrum* Khalfin, 1933 (Solomino Horizon, Frasnian, Russia) was received from Fernando Alvarez (*Departamento de Geología, Universidad de Oviedo, Oviedo, Spain*) and Tatyana L. Modzalevskaya (*All-Russian Geological Research Institute (VSEGEI), St. Petersburg, Russia*) on 4 June 2013. After correspondence the Case was published in BZN 70: 175–189 (September 2013). The title, abstract and keywords of the Case were published on the Commission’s website. Comments on this Case were published in BZN 70: 253–256. The Case was sent for vote on 1 June 2015. A greater than two-thirds majority of Commissioners voted FOR the Case (18 For, 2 Against).

Decision of the Commission

At the close of the voting period on 1 September 2015 the votes were as follows:

Affirmative votes – 18: Alonso-Zarazaga, Ballerio, Bouchet, Brothers, Grygier, Halliday, Harvey, Kojima, Kottelat, Krell, Kullander, Lamas, Pape, Štys, van Tol, Winston, Yanega, and Zhou.

Negative votes – 2: Bogutskaya and Rosenberg.

Fautin, Ng, Patterson, Pyle and Zhang were on leave of absence.

Voting FOR, Grygier commented that there was no proposal for the Commission to confirm the conditionally proposed lectotype designation for *Anathyris monstrum*, i.e. the specimen figured by Khalfin (1933a, pl. 6, fig. 1a–d; 1933b, pl. 4, fig. 3c1–c2). Approval of the rest of the proposals without such a designation would leave the matter partly open. In an effort to remedy this oversight, he declared his support FOR this lectotype designation as a write-in vote. Also voting FOR, Yanega said that he would also endorse the acceptance of the lectotype designation for *Anathyris monstrum* that was conditionally proposed in the Case. Also voting FOR, Krell said he supported the proposed lectotype designation, while Alonso-Zarazaga, who also voted FOR, formally requested the Secretariat to add to the Opinion (if approved) the recognition of the proposed lectotype as a part of the Opinion. The majority of the Commissioners supported the endorsement.

Voting AGAINST, Bogutskaya said that based upon reading the publications by Khalfin (1933a, 1933b), her opinion is that the case was not necessary, as she saw no real reason why the name *monstrum* had to be conserved as being a widely accepted senior synonym and an available name: there were three available names published (with syntypes and illustrations); *rotundatum* was, soon after, synonymised with *monstrum* by the same author keeping *monstrum* as a senior synonym; later, *mucronatum* was also synonymised with *monstrum*. However, in case there is some uncertainty with the situation with *monstrum* (being attributed to small-sized specimens only), it would be rather elegant to select a lectotype for *rotundatum* and then ask the Commission to set aside the syntypes of *monstrum* and designate the neotype, the same specimen as the lectotype of *rotundatum* (e.g. 1933a, pl. 6, fig. 1a–d; 1933b, pl. 4, fig. 3c1–c2). Consequently, she did not agree with the suggestion by Mark Grygier to ‘add a comment explicitly endorsing the lectotype designation for *Anathyris monstrum* that was conditionally proposed in the Case but was left out of the formal proposals, i.e. the specimen figured by Khalfin (1933a, pl. 6, fig. 1a–d; 1933b, pl. 4, fig. 3c1–c2)’.

Original references

The following is the original reference to the entry on the Official List in the ruling given in the present Opinion:

monstrum, *Anathyris*, Khalfin, 1933, *Materials on the stratigraphy of the Kuzbass north edge. Trudy Nauchno-Issledovatel'skogo Ugol'nogo Instituta Kuzbassugol'*, vol. 2. Novosibirsk, Moscow, Leningrad, p. 37.

OPINION 2379 (Case 3628)***Terrapene putnami* Hay, 1906 (Reptilia, Testudines, EMYDIDAE): a neotype designated**

Abstract. Under the plenary power the Commission has conserved the current usage of the name *Terrapene putnami* Hay, 1906 by replacing a nondiagnostic holotype (a fragment of a left hypoplastron) that was collected from a temporally mixed locality, with a more complete specimen comprised of the carapace, plastron, and associated non-shell postcrania from a nearby locality of late Pleistocene age. All type fixations for *Terrapene putnami* have been set aside and a firmly dated late Pleistocene neotype has been designated.

Keywords. Nomenclature; taxonomy; Reptilia; Testudines; EMYDIDAE; *Terrapene*; *Terrapene putnami*; giant box turtle; North America; Pleistocene.

Ruling

- (1) Under the plenary power all previous type fixations for the nominal species *Terrapene putnami* Hay, 1906 have been set aside and specimen UF 3066 in the Florida Museum of Natural History, Gainesville, Florida designated as the neotype.
- (2) The name *putnami* Hay, 1906, as published in the binomen *Terrapene putnami* and as defined by the neotype designated in (1) above, is hereby placed on the Official List of Specific Names in Zoology.

History of Case 3628

An application to conserve the current usage of the name *Terrapene putnami* Hay, 1906 by designating a neotype was received from Dana J. Ehret (*Alabama Museum of Natural History, Tuscaloosa, Alabama, U.S.A.*) and Jason R. Bourque & Richard C. Hulbert, Jr. (*Florida Museum of Natural History, University of Florida, Gainesville, Florida, U.S.A.*) on 25 May 2013. After correspondence the Case was published in BZN 70: 193–198 (September 2013). The title, abstract and keywords of the Case were published on the Commission's website. A comments on this Case was published in BZN 71: 29. The Case was sent for vote on 1 June 2015. A greater than two-thirds majority of Commissioners voted FOR the Case (20 For, none Against).

Decision of the Commission

At the close of the voting period on 1 September 2015 the votes were as follows:

Affirmative votes – 21: Alonso-Zarazaga, Ballerio, Bogutskaya Bouchet, Brothers, Grygier, Halliday, Harvey, Kojima, Kottelat, Krell, Kullander, Lamas, Pape, Rosenberg, Štys, van Tol, Winston, Yanega, and Zhou.

Negative votes – none.

Fautin, Ng, Patterson, Pyle and Zhang were on leave of absence.

Original references

The following is the original reference to the entry on an Official List in the ruling given in the present Opinion:

putnami, *Terrapene*, Hay, 1906, *Bulletin of the American Museum of Natural History*, **22**(3): 30.

OPINION 2380 (Case 3630)**CORCORACIDAE Mathews, 1927 (Aves) and *Coracia melanorhamphos* Vieillot, 1817 (currently *Corcorax melanorhamphos*): names conserved**

Abstract. Under the plenary power the Commission has conserved the family name CORCORACIDAE Mathews, 1927 for the Australian bird family known as mudnesters and *melanorhamphos* Vieillot, 1817 as the correct spelling of the valid name for the type species of the type genus of CORCORACIDAE.

Keywords. Nomenclature; taxonomy; Aves; CORCORACIDAE; STRUTHIDEIDAE; *melanoramphos*; *melanorhamphos*; *melanorhamphus*; Australian mudnesters; Australia.

Ruling

- (1) Under the plenary power:
 - (a) the name CORCORACIDAE Mathews, 1927 has been given precedence over STRUTHIDEIDAE Mathews, 1924, whenever the two are considered to be synonyms;
 - (b) the spelling *melanorhamphos* has been ruled to be the correct original spelling of the specific name of the type species of the type genus of CORCORACIDAE Mathews, 1927.
- (2) The following names are hereby placed on the Official List of Family-Group Names in Zoology:
 - (a) CORCORACIDAE Mathews, 1927, type genus *Corcorax* Lesson, 1831, with the endorsement that it is to be given precedence over the name STRUTHIDEIDAE Mathews, 1924 whenever the two are considered to be synonyms, as ruled in (1)(a) above;
 - (b) STRUTHIDEIDAE Mathews, 1924, type genus *Struthidea* Gould, 1837, with the endorsement that it is not to be given priority over the name CORCORACIDAE Mathews, 1927, whenever the two are considered to be synonyms, as ruled in (1)(a) above.
- (3) The following names are hereby placed on the Official List of Generic Names in Zoology:
 - (a) *Corcorax* Lesson, 1831 (gender: masculine), type species by monotypy *Corcorax australis* Lesson, 1831;
 - (b) *Struthidea* Gould, 1837 (gender: feminine), type species by monotypy *Struthidea cinerea* Gould, 1837.
- (4) The following names are hereby placed on the Official List of Specific Names in Zoology:
 - (a) *melanorhamphos* Vieillot, 1817, as published in the binomen *Coracia melanoramphos*, correct original spelling of the name of the type species of *Corcorax* Lesson, 1831, as ruled in (1)(b) above;
 - (b) *cinerea* Gould, 1837, as published in the binomen *Struthidea cinerea*, the specific name of the type species of the genus *Struthidea* Gould, 1837.

(5) The following names are hereby placed on the Official Index of Rejected and Invalid Specific Names in Zoology:

- (a) *melanoramphos* Vieillot, 1817, as published in the binomen *Coracia melanoramphos*, incorrect original spelling of the name of the type species of *Corcorax* Lesson, 1831;
- (b) *melanorhamphus* Cabanis, 1851, as published in the binomen *Cercoronis melanorhamphus*, unjustified emendation of the specific name of *Coracia melanorhamphos* Vieillot, 1817.

History of Case 3630

An application to conserve the family-group name CORCORACIDAE Mathews, 1927 for the Australian bird family known as mudnesters and the spelling *melanorhamphos* Vieillot, 1817 for the type species of the type genus of CORCORACIDAE was received from Richard Schodde (*Australian National Wildlife Collection, CSIRO Ecosystem Sciences, Canberra, ACT, Australia*), Walter Boles (*Australian Museum, Sydney, New South Wales, Australia*), Les Christidis (*National Marine Science Centre, Southern Cross University, Coffs Harbour, New South Wales, Australia*), Philippa Horton (*South Australian Museum, Adelaide, South Australia, Australia*), Ron Johnstone (*Western Australian Museum, Welshpool DC, Western Australia, Australia*), Leo Joseph (*Australian National Wildlife Collection, CSIRO Ecosystem Sciences, Canberra, ACT, Australia*), and Wayne Longmore (*Museum Victoria, Melbourne, Victoria, Australia*) on 25 May 2013. After correspondence the Case was published in BZN 70: 238–244 (December 2013). The title, abstract and keywords of the Case were published on the Commission's website. Comments on this Case were published in BZN 71(1): 39–40 (March 2014) and 71(3) 182–183 (September 2014). The Case was sent for vote on 1 June 2015. A greater than two-thirds majority of Commissioners voted FOR the Case (14 For, 2 Against, 4 Split).

Decision of the Commission

At the close of the voting period on 1 September 2015 the votes were as follows:

Affirmative votes – 14: Alonso-Zarazaga, Ballerio, Brothers, Halliday, Harvey, Kottelat, Lamas, Pape, Rosenberg, Štys, van Tol, Winston, Yanega and Zhou.

Negative votes – 2: Bogutskaya and Kojima.

Split votes – 4: Bouchet (FOR (1)(a), (2); AGAINST 1(b), (3), (4), (5); Grygier (FOR (1), (2), (3), (4)(a), (5)); AGAINST (4)(b)), Krell (FOR (1)(a), (2)(a), (2)(b), (3)(a), (3)(b), (4)(b), (5)(b); AGAINST (1)(b), (4)(a), (5)(a)), Kullander (FOR (1)(a), (2)(a), (2)(b); (3)(a), (3)(b), (4)(b); AGAINST (4)(a), (5)(a), (5)(b)).

Fautin, Ng, Patterson, Pyle and Zhang were on leave of absence.

Voting AGAINST, Kojima said that both proposals (namely, to give the name CORCORACIDAE Mathews, 1927 precedence over STRUTHIDEIDAE Mathews, 1924, whenever the two are considered to be synonyms; and to treat *melanorhamphos* as the correct original spelling) have weak background reasons in terms of nomenclatural stability. CORCORACIDAE (or correctly STRUTHIDEIDAE) included only two monospecific genera and at the subfamily level these two names (CORCORACINAE and STRUTHIDEINAE) were sometimes treated as different taxa, each consisting of a single monospecific genus. Therefore, most scientists could cope with the use of STRUTHIDEIDAE instead of CORCORACIDAE, he added.

SPLITTING his vote, Bouchet said that the name *melanorhamphos* was formed from the two Greek words *melas* (*melanos*) – black, and *rhamphos* – bill, and it was mnemonically easier to remember that *melanorhamphos* was the correct spelling to be used for the white-winged mudnesters. As this name appeared to be in dominant usage, he voted for its conservation. However, he viewed conditional reversal of precedence as a source of instability, so he voted against giving precedence to the name CORCORACIDAE Mathews, 1927 over STRUTHIDEIDAE Mathews, 1924. Also SPLITTING his vote, Grygier said that this Case included no request for any particular ruling concerning the type-species designation for *Struthidea*, nor concerning the specific name *cinerea* per se, and it is therefore unclear, under the specifications provided in Article 78.4.2, why *cinerea* should be entered on the Official List. Also SPLITTING his vote, Krell said that the currently predominant spelling *melanorhamphos* was not much different from the actual original spelling *melanoramphos*. Since the original spelling was currently used by some authors and a change back to the original spelling would only be a minor change for the majority of authors, he suggested the original spelling should be used, which would lead to a more stable nomenclature in the long run. Also SPLITTING his vote, Kullander said that the adoption of CORCORACIDAE seemed sound, but there was no reason to rule on the species name. The authors stated that the original spelling was adopted particularly by digital sources, whereas the non-original spelling was contained in a printed book unlikely to ever be updated. He was convinced that the usage would be guided by freely available updated online sources and not by an outdated book that would be difficult to obtain after a few years.

Original references

The following are the original references to the entries on either an Official List or an Official Index in the ruling given in the present Opinion:

- CORCORACIDAE Mathews, 1927, *The birds of Australia*, vol. 12, pt. 10. H.F. & G. Witherby, London, p. 413.
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- Corcorax* Lesson, 1831, *Traité d'ornithologie, ou tableau méthodique des orders, sous-orders, familles, tribus, genres, sous-genres et races d'oiseaux*, vol. 1. F.G. Levrault, Paris, pp. 324–325.
- melanoramphos*, *Coracia*, Vieillot, 1817, *Coracias*, in: *Nouveau Dictionnaire d'Histoire Naturelle*, Nouvelle Édition, vol. 8. Déterville, Paris, p. 2.
- melanorhamphos*, *Coracia*, Vieillot, 1817, *Coracias* in: *Nouveau Dictionnaire d'Histoire Naturelle*, Nouvelle Édition, vol. 8. Déterville, Paris, p. 2.
- melanorhamphus*, *Cercoronis*, Cabanis, 1851, *Museum Heineanum. Verzeichniss der ornithologischen Sammlung des Oberamtmann Ferdinand Heine, auf Gut St. Burchard vor Halberstadt, 1 Theil, die Singvögel*. R. Frantz, Halberstadt, p. 228.
- melanorhamphus*, *Coracia*, Vieillot, 1817, *Coracias*. in: *Nouveau Dictionnaire d'Histoire Naturelle*, Nouvelle Édition, vol. 8. Déterville, Paris, p. 2.
- cinerea*, *Struthidea*, Gould, 1837, *A synopsis of the birds of Australia and adjacent islands*. J. Gould, London, unnumbered plate, January, part 1.
- Struthidea* Gould, 1837, *A synopsis of the birds of Australia and adjacent islands*. J. Gould, London, unnumbered plate, January, part 1.
- STRUTHIDEIDAE Mathews, 1924, *The birds of Australia. Supplement No. 3. Check list of the birds of Australia, pt 3. Order Passeriformes (concluding part)*. H.F. & G. Witherby, London, p. 218.

NOMENCLATURAL NOTES

Rediscovery of the type series of the Carboniferous ichnospecies *Attenosaurus subulensis* (Aldrich in Aldrich & Jones, 1930) and *Cincosaurus cobbi* (Aldrich in Aldrich & Jones, 1930) with comments on the designation of neotypes

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Abstract. The purpose of this note, under Article 75.8 of the Code, is to set aside the neotype for the ichnospecies *Attenosaurus subulensis* Aldrich in Aldrich and Jones, 1930. It was believed that the type specimens for *Attenosaurus subulensis* were lost; however, a recent search through the collections at the Alabama Museum of Natural History in Tuscaloosa led to the rediscovery of one of the two syntypes. Furthermore, the rediscovery of the syntype of the ichnospecies *Cincosaurus cobbi* Aldrich in Aldrich and Jones, 1930 should also be recognized. The discovery of a portion of the *Attenosaurus subulensis* type series negates the previously erected neotype.

Keywords. Pennsylvanian; Alabama; Pottsville Formation; ichnospecies; trackways.

Attenosaurus subulensis Aldrich in Aldrich and Jones, 1930 (p. 13) and *Cincosaurus cobbi* Aldrich in Aldrich and Jones, 1930 (p. 27) are large tetrapod ichnospecies from the Early Pennsylvanian (Morrowan) of Alabama. Although no accession numbers were given to the syntypes of either species, the figured specimens for *A. subulensis* (Aldrich, 1930, pls. 2–4) and *C. cobbi* (Aldrich, 1930, pls. 6–7), housed at the Alabama Museum of Natural History (ALMNH) in Tuscaloosa, are recognized as the syntypes. These specimens were recovered from the Galloway Number 11 Mine, near Carbon Hill, Walker County, Alabama. The specimens were found above the Jagger Coal Seam within the Pottsville Formation, Lower Pennsylvanian, Morrowan (Aldrich & Jones, 1930; Metzger, 1965; Hunt et al., 2004; Haubold et al., 2005; Pashin, 2005). The purpose of this report is twofold: (1) to re-establish types for *Attenosaurus subulensis* and *Cincosaurus cobbi* based on the specimens figured in Aldrich (1930, Plates 2–4 and 6–7), and 2) to invalidate the designated neotype for *A. subulensis* (see Hunt et al., 2004; p. 40, Fig. 4A).

Syntypes for both ichnospecies were figured in the original 1930 description by Aldrich and were at the Alabama Museum of Natural History. In the subsequent 75 years, owing partially to the fragile nature of the shale in which the trackways are preserved, the syntypes were thought to be destroyed or lost.

In recent re-analyses of the ichnofauna of the Pottsville Formation, Alabama, various authors have noted that the types of *A. subulensis* and *C. cobbi* were lost (Hunt et al., 2004; Haubold et al., 2005). Both Hunt et al. (2004, p. 40, Fig. 4A) and Haubold et al. (2005, p. 93, 109) discussed the taxonomy of *Attenosaurus* and *Cincosaurus* in detail. Hunt et al. (2004, p. 40) recognized *Attenosaurus indistinctus* Aldrich, 1930 (ALMNH PV 1985.0001.0014) as a nomen dubium and *Cincosaurus jonesi* Aldrich, 1930 (ALMNH

PV1985.0001.0025) as a junior synonym of *A. subulensis*. Furthermore, Hunt et al. (2004, p. 40) designated another ALMNH specimen as the neotype of *A. subulensis*, an unaccessioned specimen on display at the ALMNH collected by Truman H. Aldrich and Walter B. Jones at the Holly Grove Mine, Walker County, Alabama in the late 1920s or early 1930s. This specimen is believed to be in the ALMNH but its whereabouts is currently unknown. Both Hunt et al. (2004) and Haubold et al. (2005) commented on the lost type, but neither designated a neotype for *C. cobbi*.

A recent inventory, made by the author, of types in the ALMNH collections led to the rediscovery of one of the two syntypes of *A. subulensis* and the syntype of *C. cobbi*. Although both syntypes are damaged, the remaining portions of both specimens are diagnostic enough to warrant retention of their type status. The identification of the syntypes was aided by examination and comparisons with the original photographs of the specimens published with the description of the new ichnospecies by Aldrich in Aldrich & Jones (1930) (Figs. 1 and 2). The type of *A. subulensis* (ALMNH PV1985.0001.0018) was found broken into a number of smaller pieces but is currently undergoing restoration (Fig. 1). The syntype of *C. cobbi* (ALMNH PV1985.0001.0027) has been broken and only a portion of the specimen remains (Fig. 2).

Since the syntypes of both ichnospecies have been recovered in the Alabama Museum of Natural History collections, following Article 75.8 of the International Code of Zoological Nomenclature the designated neotype should be set aside. Although the types were not given designated accession numbers by Aldrich in Aldrich & Jones (1930), two specimens referred to *Attenosaurus subulensis* and one specimen of *Cincosaurus cobbi* were figured and referred to as ‘types’. For *A. subulensis*, ALMNH PV1985.0001.0018, was figured in

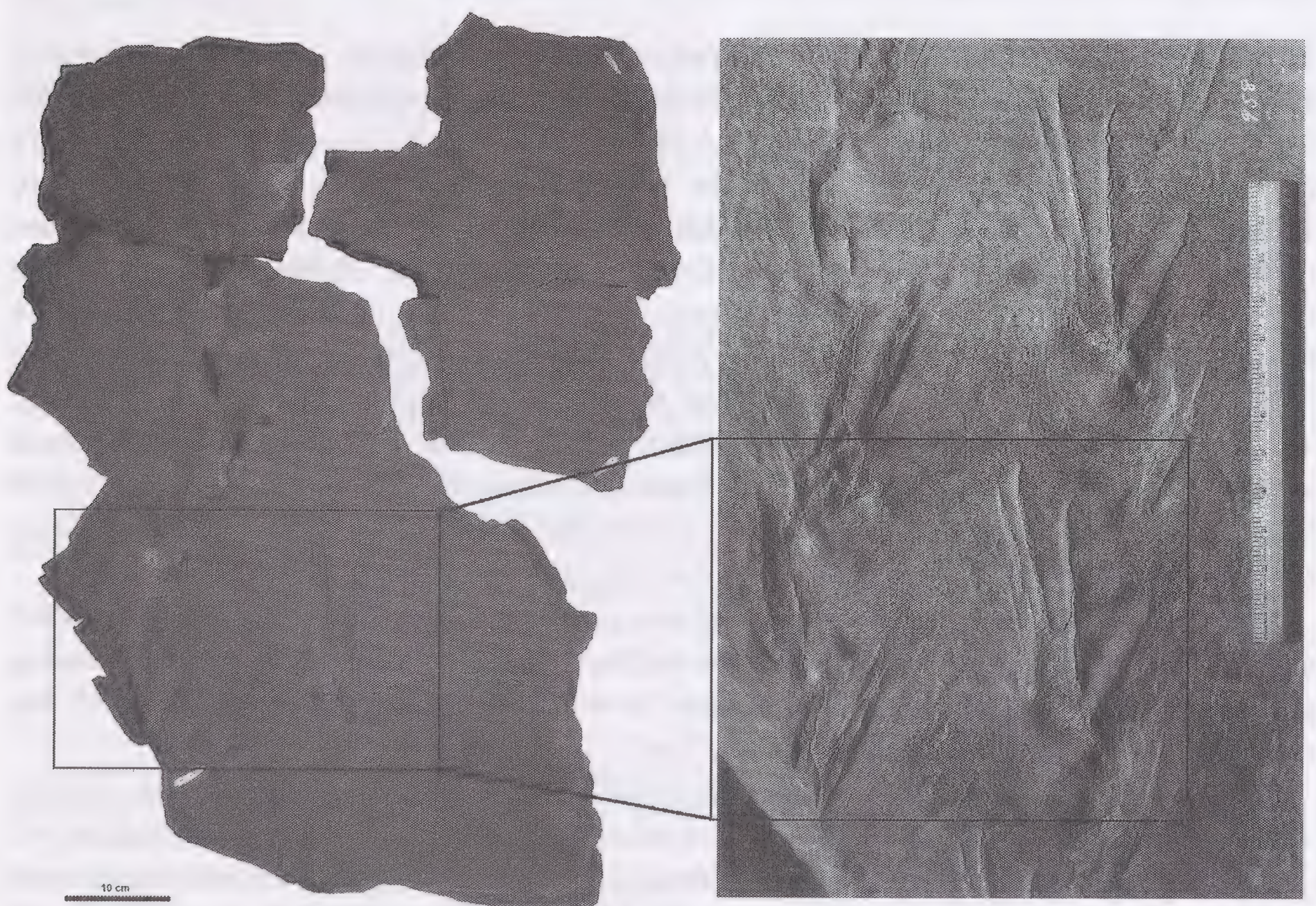


Fig. 1. The current state of the figured lectotype of *Attenosaurus subulensis* (ALMNH PV1985.0001.0018) (left) and the original picture (ALMNH 5A-958) of the same specimen figured (Plate 2; p. 17) in Aldrich & Jones (1930). The highlighted region on the lectotype corresponds to the same region in the photograph.

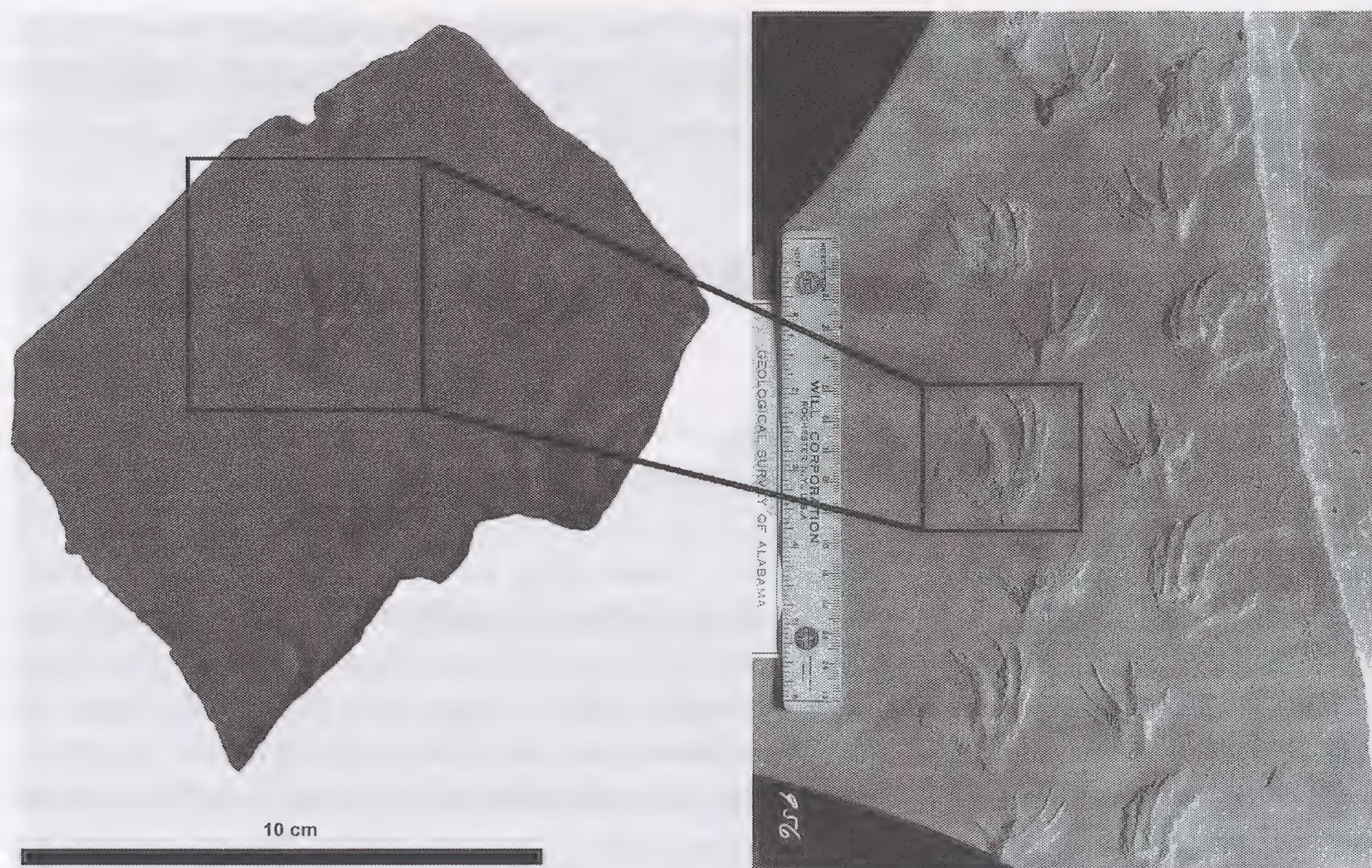


Fig. 2. The current state of the lectotype of *Cincosaurus cobbi* (ALMNH PV1985.0001.0027) (left) and the original picture (ALMNH 5A-956) of the same specimen figured (Plate 7; p. 31) in Aldrich & Jones (1930). The highlighted region on the lectotype corresponds to the same region in the photograph.

Aldrich (1930, pls. 2, 4). A second, unnumbered specimen was figured in Aldrich (1930, pl. 3). Thurmond & Jones (1981) referred to specimen ALMNH PV1985.0001.0018 as the holotype. Under Article 74.5 of the Code this constitutes a valid lectotype designation for the nominal species *Attenosaurus subulensis*. Unfortunately, the second figured syntype of *A. subulensis* is either lost or has been destroyed. Hereby specimen ALMNH PV1985.0001.0027 is designated as the lectotype of *C. cobbi*. It is the hope that this note will clarify type specimens of these iconic ichnospecies.

Acknowledgements

I would like to thank J. Ebersole (*McWane Science Center, Birmingham, Alabama*) for constructive comments. I would also like to thank R. Buta (*University of Alabama, Tuscaloosa, Alabama*) for confirming the identity of the type specimens.

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Validity of the name *Dama roberti* Breda & Lister, 2013, a small European Pleistocene deer, and the status of *Cervus polignacus* Robert, 1829 and *Cervus roberti* Pomel, 1853

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Under the name *Cervus Dama polignacus*, Robert (1829) described a large deer skeleton found in Middle Pleistocene deposits in the vicinity of Soleilhac, France. He then described a second, much smaller deer skeleton found some distance away. He pointed out that it was adult and therefore fully grown, and explicitly left open the question of whether it was conspecific with the larger individual, a question that only new discoveries would resolve: 'Cette énorme différence de grandeur . . . indiquerait-elle deux espèces différentes, ou seulement deux races de la même espèce . . . ? C'est ce que de nouvelles découvertes me permettront de décider' [Does this enormous difference in size . . . indicate two different species, or merely two races of the same species . . . ? This is what new discoveries will allow me to decide']. That he intended the name *C. polignacus* to refer to the larger specimen is reinforced by his informal name for it: 'Grand Daim de Polignac'. Under Article 72.4.1 of the Code, the smaller skeleton was only doubtfully attributed to *C. polignacus* and does not constitute part of its type series; the larger skeleton is the holotype.

Pomel (1853) introduced the name *Cervus roberti* as a replacement name for *C. polignacus*. He did not mention either of the two specimens explicitly, and his brief description draws on features of both of them from Robert's (1829) account. Under Article 72.7 of the Code, *C. roberti* is a junior objective synonym of *C. polignacus* and has the same name-bearing type, i.e. the larger skeleton as established above. *C. roberti* has been used as valid by Scrope (1858), Lydekker (1885), De Stefano (1914), and Azzaroli (1953); hence it is available under Article 11.6.1 of the Code. Azzaroli (1953), followed by van der Made et al. (2015), incorrectly applied the name to the small skeleton only.

Breda & Lister (2013) named *Dama roberti*, a small species of fossil deer, with holotype a partial skeleton from the Middle Pleistocene of Pakefield (U.K.) and paratype the small skeleton from Soleilhac originally described by Robert (1829) as discussed above. A further individual of *D. roberti* from Italy was described by Breda (2015). Van der Made et al. (2015) consider that *D. roberti* could be both a synonym and a homonym of *C. roberti*. However, the holotype of the latter is the large skeleton from Soleilhac (*C. polignacus*) which is clearly a different species from *D. roberti* and hence not synonymous (Breda & Lister, 2013); and *C. roberti* was established in a different genus from *D. roberti* and they are hence not homonymous (Article 53.3 of the Code). Nor is there currently any threat of secondary homonymy because the type of *C. polignacus* and *C. roberti* is nowadays considered to pertain not to the fallow deer genus *Dama* but to the 'giant deer' *Megaceroides* Joleaud, 1914 or *Praemegaceros* Portis, 1920 (Breda et al., 2015).

Van der Made et al. (2015) suggest that these perceived problems could be resolved by considering the name *D. roberti* an inadvertent error and correcting it to *Dama robertorum*, since its authors, Breda & Lister (2013), named the species for two men named Robert (Robert Mutch, who discovered the holotype in 2003, and Félix Robert who described the paratype in 1829). However, aside from the absence of any problem of synonymy or homonymy, incorrect latinization is not considered an inadvertent error according to Article 32.5.1 of the Code. *D. robertorum* is therefore an unjustified emendation in the sense of the Code (Article 33.2). The name *D. robertorum* was unavailable at the time of the online publication, as van der Made et al.'s (2015) paper was not registered in ZooBank, though it will become available (yet invalid) as *Dama robertorum* van der Made et al., 2016 when published.

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Describing new species in the absence of sampled specimens: a taxonomist's own-goal

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Abstract. Photographs of individuals of new species have been used recently as a proxy for physical holotypes when specimens could not be or were not sampled. The arguments that have been presented in favour of this practice are discussed and shown to be ill-founded. The absence of physical specimens may be the source of considerable controversy and the effects of describing new species without physical holotypes are considered detrimental to the future of taxonomy and maintenance of scientific collections.

Keywords. Nomenclature; taxonomy; designation of holotypes; Diptera; Aves; illustrations; specimens.

A recent description of a new species based on an insect retained in a photograph only (Marshall & Evenhuis 2015) raises problems that concern taxonomy and question its scientific foundation. As in all sciences, published information has to be at least potentially verifiable. Unverifiable information is in the domain of belief. The Code (1999) ensures a link between published taxonomic information and the reality on which it is based (Article 61.1.): *'Each nominal taxon . . . has actually or potentially a name-bearing type. The fixation of a nominal taxon provides the objective standard of reference for the application of the name it bears.'*

The objectivity of established names is, however, weakened by Article 73.1.4: *'Designation of an illustration of a single specimen as a holotype is to be treated as designation of the specimen illustrated; . . . '*, for example because of the fact that any photograph can easily be modified or misinterpreted. An underlying message of Article 73.1.4 is the absence of distinction between specimens produced by natural processes and illustrations produced by humans, at least as far as descriptions of new species-group taxa are concerned. Although the issue was discussed in detail by Dubois & Nemésio (2007), a new case calls for new reactions.

A concrete case of complications and confusions in taxonomy produced by the application of Article 73.1.4 is shown by the recent description of a bird species from the Middle East. In 2013, a team of ornithologists discovered an unknown population of desert owl

in Northern Oman (Robb et al., 2013). This bird was first heard and its call recorded, and later the team obtained several photographs. It differed in morphology and sound from the only known species of owl in the region (*Strix butleri*). Based on the available evidence, the team described a new species (*Strix omanensis*) but they refrained at that time from collecting or even capturing a specimen, because of the taxon's rarity. However, Kirwan et al. (2015) analysed the type specimen of *Strix butleri* using genetic and morphological characters, and revealed that it differs significantly from all other specimens previously ascribed to this species. The geographical provenance of the type was unfortunately uncertain. Kirwan et al. (2015) considered that two species-level taxa were involved, *Strix butleri* for the type and the newly described *Strix hadorami* (holotype BMNH 1965.M.5235 from Israel) for the other specimens from the Middle East. The lack of a type specimen for *Strix omanensis* left them unable to compare this taxon to its congeners. However, they pointed to clear evidence of morphological congruence between the type of *butleri* and the phenotype described as '*omanensis*', and recommended that this name be considered as a synonym of *butleri*. Their hypothesis was finally supported by a new analysis of Robb and colleagues (unpublished manuscript available on BioRxiv), in which they obtained genetic material from an Oman population of *Strix* and compared the sequences to those published by Kirwan et al. (2015). These sequences proved to be the same as those of the type specimen of *Strix butleri* and of another bird sampled in Iran.

Owls are very well known and not as diverse as many invertebrate taxa, but still the use of Article 73.1.4 by Robb et al. (2013) had unforeseen negative effects. Unlike birds, many undescribed species remain to be sampled in megadiverse groups, such as Diptera and other insects. Taxonomists describing new species in such groups can eventually predict but never exclude the existence of other, similar sympatric species. The history of taxonomy is a long chain of such discoveries, paralleled by discoveries of new characters that enable more reliable discrimination of the ever increasing number of recognized taxa. The absence of specimens, as in the new species of *Marleyimyia* described by Marshall & Evenhuis (2015), prevents the discovery of additional characters and is foreseen as a source of future problems.

The discovery of unexpected, spectacular new species is doubtlessly an event that requires publication. Such discoveries may also be important to support conservation of sites and/or may have positive political impact. No doubt, such publications are desirable, and nothing in the world impedes authors to write about them. However, the necessity to establish new binomens is doubtful when provisions of the ICZN are not met, or if the available information about the respective taxa is considered too incomplete. Taxonomists currently have ways to denote such taxa informally. Conservationists, ecologists and others may use published information about unnamed taxa just as well as if they would have been denoted by available binomens.

Marshall & Evenhuis (2015) advocate their action and the possibility of using illustrations instead of specimens to describe species by: (a) the increasing number of 'digital collectors' building collections of images; (b) the 'extreme' rarity of the illustrated taxon; (c) the quality of high-resolution photography; (d) loss of primary type material; (e) the increasing difficulties in sampling physical specimens.

We consider these arguments weak for the following reasons:

(a) Taxonomy might be threatened because of the increasing power and availability of digital photography, improving one's chances of quickly capturing images of animals, without carefully studying the animal themselves.

(b) The notion of ‘rarity’ has meaning when sizes of populations are known. This is certainly not the case in *Marleyimyia*, nor in the bulk of other animal species. Such ‘rarity’ only points to a lack of knowledge.

(c) In our view only physical specimens (or parts of specimens) provide the possibility of positively identifying biological species and revealing their characters, apart from external morphology, which is the only one set of characters available from photographs. Examination of physical specimens may reveal biological characters that cannot be captured solely by photography, precluding adequate comparison with closely related taxa.

(d) Physically lost primary types may be replaced by neotypes if necessary. However, it is not entirely clear if a neotype can be proposed when a name was established in the absence of a physical type. For example, can a neotype be established without recourse to the Commission if the illustration used as a proxy is lost or damaged or found to be inadequate or tampered with?

(e) As Marshall & Evenhuis (2015) stated, there are ‘vanishingly few examples of scientific collecting having a detrimental effect on populations or species . . .’. In fact, it may be reasonable to protect the few thousand larger vertebrate species by particular legislation, but the bulk of animal species consists of invertebrates and every hour the number of invertebrates dying naturally or accidentally by human means, not counting purposeful destruction of unique habitats, probably exceeds that of all the specimens ever collected for scientific purposes around the world. Nevertheless, the legislations adopted as a consequence of inadequate information and side-effects of the Nagoya Protocol have added notable additional difficulties in sampling specimens. By bureaucratic requirements and uncertainties they discourage field research, and hamper the increase of knowledge about forms of life that evolved and occur on our planet. According to estimates, less than half, possibly only a fifth or sixth of the extant species have been so far sampled and reported in publication. The ongoing anthropogenic pressures on habitats threaten most of both the described and the not yet sampled species. The problem is largely political and it should be approached carefully and considered and monitored at all levels, before establishing multiple new taxa under Article 73.1.4.

(f) Taxonomists admittedly have sufficient common sense not to use Article 73.1.4 frequently, but this does not mean that the problem is not there. Publications such as those of Marshall & Evenhuis (2015) or Minter et al. (2014) may also stimulate non-experts to describe new species based on photographed specimens. As good quality photography is quite common while taxonomic expertise is becoming rare, a major threat may be foreseen if Article 73.1.4 remains applicable and is routinely used. The unrestricted use of this article of the Code may affect institutions, which are already facing difficulties depending on sponsors with a poor understanding of the need for keeping physical specimens. With dwindling financial support, natural history collections will encounter further difficulties if decision-makers consider scanning specimens to be an acceptable proxy for physical specimens.

This paper is an invitation to a discussion, which we hope will be useful for a new edition of the Code.

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Proxy types, taxonomic discretion, and taxonomic progress: a response to Löbl et al.

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We were glad to see the Löbl et al. (this issue) response to our recent paper on the application of Article 73.1.4, in which we put forward that special circumstances can justify the naming of a new species using a photograph as a proxy for a lost type specimen (Marshall & Evenhuis, 2015). We framed that position against a simple and specific example in the hopes of drawing attention to this issue, which we expect to be of increasing interest and importance in the coming years. The thoughtful counterpoint provided by Löbl and colleagues is exactly the kind of discussion we had hoped to stimulate, and we welcome the opportunity to address their criticisms of our point of view.

Their most substantive, and most easily dismissed, criticism is that the formal naming of a species in the absence of a type specimen questions the scientific foundation of taxonomy, and '*is in the domain of belief*' rather than science. This suggests a rather peculiar line between 'science' and 'non science'. The description and naming of a new species, whether a formal binominal is used or not, and whether or not the type is lost, represents a set of testable hypotheses about character state distribution and thus about the reality of the species described. A description that points to attributes visible in a photo is no different in this regard than a description that points to attributes of a physical type specimen. A description based on character states visible on a compression fossil, a description based on character states captured using photography, and a description based on character states recorded by direct observation of a pinned specimen or permanent slide mount all make similar predictions (testable hypotheses) about the distribution of those character states in nature. In the normal course of events those predictions are tested when additional specimens are observed, not by re-examination of the original type specimen.

Although there is no case to be made for distinguishing science from non-science by the presence or absence of a designated type or voucher, we heartily endorse the recommendation that all scientists dealing with species designate vouchers. We frequently remind students in ecology and other disciplines that the value of their work could be greatly diminished if in the future the identities of their research organisms is questioned and there are no vouchers to examine. This can be a problem if the identification of the research organisms is suspect, or if a named research organism turns out to be a complex of taxa. Taxonomists have long relied on vouchers, in the form of holotypes, to guard against the possibility that their written descriptions prove inadequate to separate their species from others, newly discovered or not. And indeed, we have spent large chunks of our careers studying older holotypes of species unrecognizable on the basis of published descriptions. A welcome development in recent years has been the widespread availability

of photographs of types, often of adequate quality to save the expense, risk and difficulty of borrowing a type specimen for direct examination. A more ‘game-changing’ development is the increasingly common practice of including detailed digital images of specimens, or even living individuals, as a routine part of new descriptions. Such practices minimize, but do not eliminate, the possibility that recourse to the type specimen might be needed in the future. The standard practice of designating types, or vouchers, thus remains a good one although we maintain that the lack of a type specimen should not stand in the way of providing a name for a thoroughly substantiated and well-illustrated species.

Löbl et al. maintain that a photograph is not acceptable as a surrogate for a lost type specimen because ‘*any photograph can easily be modified or misinterpreted*’. Let us look at these two problems in turn, starting with ‘modified’. The possibility that someone could deliberately clutter the literature with a fake photo, fake fossil or fake specimen is a real one. The Piltdown Man story is a famous example of this, as is the more recent forgery of ‘*Archaeoraptor liaoningensis*’. Obviously, this possibility is not unique to photography. We can all point to bad descriptions, misleading illustrations, and mangled/fragmentary/slide-mounted type specimens that border on ‘fake’, and it would be no harder to describe a specimen based on a deliberate chimera than on a deliberately modified photograph. We have encountered accidental chimeric type specimens (mismatched genitalia and bodies) and suspect that such errors are not uncommon. Minor adjustments to images (such as brightness and contrast) are far less ‘modification’ than the fading or discoloration commonly seen in physical specimens, but we concede that deposition of an original raw digital image file is a good idea. The essential point here is that if someone wants to cheat, a requirement for a type specimen is hardly a barrier. But deliberate cheating is so unusual we do not consider it to be a problem.

Now, let’s move on to ‘misinterpretation’. If a photograph or set of photographs is good enough for a taxonomist to use it as a proxy type, why would it be more subject to misinterpretation than a specimen? A good photo of a living micropezid fly, for example, shows true colour, true posture, and exposed membranous structures not visible (or subject to misinterpretation) on a pinned specimen. There are no grounds to suggest that a good photo is more likely to be misinterpreted than a specimen, and in fact a good photo of a living specimen is far less open to misinterpretation than a permanent slide mount, a compression fossil, a shrivelled pinned specimen, or a fragmentary specimen (all of which are routine and acceptable as holotypes).

The ‘*concrete case of complications and confusions*’ given by Löbl et al. is an interesting story and a familiar one to any taxonomist, but with little bearing on the issue under debate. Every time we examine a previously named species in the course of a revision there is a possibility that it will turn out to be two or more species, and that the additional species will be undescribed. A normal part of that process is to figure out which of the multiple species corresponds with the original name. Robb et al. (2013, cited in Löbl et al. [this issue]) recognized that there were two species under the name *Strix butleri* (Hume), and that one of them must therefore be new. Unfortunately, they misidentified the new species as the one corresponding to the original name even though there was a type specimen corresponding to that 1878 name, and this led them to coin a new name for *S. butleri*. Kirwan et al. (2015, cited in Löbl et al. [this issue]) discovered this error by examining the type specimen of *S. butleri*, and showed that Robb et al. picked the wrong one of those two species to describe as new. The species described by Robb et al. was therefore a junior synonym. This is all routine stuff for any taxonomist, and led to

hypotheses later tested by obtaining and sequencing new material. The only twist to the tale is that Robb et al. (2013) based their description on multiple photos and recordings rather than a dead bird, a justifiable decision under the circumstances.

Löbl et al. allege from the above example that ‘the absence of specimens, as in the new species of *Marleyimyia* described by Marshall & Evenhuis (2015), prevents the discovery of additional characters and is foreseen as a source of future problems’. In fact, such ‘problems’ can only arise once new specimens have been collected and studied for additional characters. It is possible that such new specimens will include two species externally identical to *Marleyimyia xylocopae* Marshall & Evenhuis. This is little different from a routine problem created when an insect species is described from females and it is later found that it is one of two species differing only in male terminalia. When an existing female type could correspond to either species, a pragmatic choice is usually made based on collection locality. *Marleyimyia* would be an easier case to resolve since the type is lost and the Code specifically allows for the designation of a neotype, which would neatly solve the problem of the two newly discovered externally identical species.

The phrase ‘*prevents the discovery of additional characters*’ is worthy of further comment since it is of course impossible to sequence or dissect a photograph. We agree that this is a good reason to make every effort to obtain a type specimen or type series, but to argue that new species must be based on types available for future extraction of molecular data or study of internal morphology would be a slippery slope indeed. This would obviously present a problem for the many taxa routinely described from permanent slide mounts, and of course for taxa described from compression fossils or amber, but it goes much beyond that. What about specimens treated in such a way that the DNA is destroyed? Flies collected into pan traps often sit in water for days, and then are stored in 70% alcohol for long periods before being soaked in ethyl acetate or other chemicals in preparation for mounting . . . are such specimens to be disallowed as types if they cannot be sequenced? What about very old specimens, or damaged specimens, or specimens that cannot be dissected? Of course it is ideal to have long series, both sexes, illustrations of genitalia, fresh specimens, photographs, behavioral data, sequence data and so on, but in practice taxonomists must work with what they have.

In the next paragraph Löbl et al. grant that the discovery of ‘*unexpected, spectacular new species is doubtlessly an event that requires publication*’, that ‘*such publications are desirable, and nothing in the world impedes authors to write about them*’, but that taxonomists should *denote such taxa informally*, and that ‘*conservationists, ecologists and others may use published information about unnamed taxa just as well as if they would have been denoted by available binominal*’. We do not entirely agree that the discovery of spectacular new species requires publication, and in fact we feel quite strongly that the description of a new species is only a contribution to science if it is done in the context of a meaningful group and if the species is unequivocally distinguishable from every member of that group over a significant geographic area. Papers describing out-of-context, single new species in unrevised taxa are often a burden on taxonomy, with or without types. But if a species warrants description and if enough information is available to adequately describe and illustrate the species, we consider it pointless to name the species outside the purview of the Code. We do indeed want ‘conservationists, ecologists and others’ to use our taxonomies, and that is one reason we want to work within a system for communication using names that are unique, universal, stable, and reflective of relationships. If a species is worth naming, it is worth naming using the Rules of Nomenclature.

Now, let us examine, point-by-point, Löbl's criticism of our discussion of the future importance of digital images.

'Taxonomy might be threatened because of the increasing power and availability of digital photography, improving one's chances of quickly capturing images of animals, without carefully studying the animal themselves'. This point is entirely backwards! Macrophotography demands hours of observation and tremendous patience, as opposed to collecting which is increasingly done with Malaise traps and other mass collection devices. Photos of living individuals, perhaps showing behaviour, microhabitat or soft structures, are a tremendous adjunct to any species description. The thought that this 'threatens' taxonomy is not well-founded.

'The notion of 'rarity' has meaning when sizes of populations are known. This is certainly not the case in Marleyimyia, as in the bulk of other animal species. Such 'rarity' only points to a lack of knowledge.' It is true that the term 'rare' is often used loosely for 'rarely collected' or 'apparently rare', and *Marleyimyia* is both. All evidence suggests that *Marleyimyia* really is a rare taxon, but this has no bearing on the question at hand.

'Examination of physical specimens may reveal biological characters that cannot be captured solely by photography, precluding adequate comparison with closely related taxa.' Also true. But so is the converse . . . examination of photographs may reveal biological characters not available on physical specimens. We really should have both, but in the real world we make decisions based on what is practical.

'it is not entirely clear if a neotype can be proposed when a name was established in the absence of a physical type' The Code glossary defines 'neotype' as 'The single specimen designated as the name-bearing type of a nominal species or subspecies where there is a need to define the nominal taxon objectively and no name-bearing type is believed to be extant.' In the case of *Marleyimyia*, we state that the type was lost during collection. We feel that statement falls within the definition of 'no name bearing type is believed to be extant'. This would no doubt be the case for other situations where photography alone was used to depict a type specimen.

'every hour the number of invertebrates dying naturally or accidentally killed by humans, not counting purposeful destruction of unique habitats, probably exceeds that of all the specimens ever collected for scientific purposes around the world. Nevertheless, the legislations adopted as a consequence of inadequate information and side-effects of the Nagoya Protocol have added notable additional difficulties in sampling specimens. By bureaucratic requirements and uncertainties they discourage field research, and hamper the increase of knowledge about forms of life that evolved and occur on our planet.' We agree wholeheartedly with this entire paragraph, as the impact of restrictive legislation on the progress of taxonomy is a serious problem. It is difficult to get permission for narrowly targeted collecting and essentially impossible to get permission to do traditional 'general' collecting in most countries, and thus general collection growth has stalled. This will have a great impact on future taxonomists looking for new material and distributional records. Some of that need will be met by the growth of digital image collections, a reality we will have to come to grips with whether we like it or not. And if Article 73.1.4 allows a taxonomist to complete a work by utilizing images of specimens from an area from which it is impractical to obtain physical specimens, then this is a good thing.

'publications such as those of Marshall & Evenhuis (2015) or Minter et al. (2014) may also stimulate non-experts to describe new species based on photographed specimens.' This is the objection most often raised to the practice of using photographs as

proxy specimens. There is a fear that non-experts, or (worse yet) experts who already have the bad habit of scratching their ‘mihi itch’ (see Evenhuis 2008) with out-of-context or opportunistic descriptions, will clutter the literature with dubious new species based on photos. We think this is an unfounded fear and believe quite the opposite will result. Since the intrinsic transparency of submitted papers with descriptions that are based all or partly on photos will lead to an increased scrutiny by both editors and reviewers, it should instead result in a drop in published nuisance descriptions. On the other hand, Article 73.1.4, used responsibly, will give good taxonomists one more tool to ensure that their publications are complete and their taxa are appropriately recognizable.

‘The unrestricted use of this article of the Code may affect institutions, which are already facing difficulties being depended on sponsors with a poor understanding of the need in keeping physical specimens. With dwindling financial support, natural history collections will encounter further difficulties if decision-makers consider scanning specimens to be an acceptable proxy for physical specimens.’ This is a worrisome point. We have had similar concerns about the possibility of new restrictions on collecting due to a misconception that specimens are no longer needed. It would certainly be ironic if this were the case, since we are strong proponents of insect collections (i.e. Marshall, 1992, Wiggins et al., 1991, Brunke & Marshall, 2011) and vocal critics of restrictions on insect collecting (Marshall, 1995). We trust that anyone with enough interest in the subject to make that sort of decision will read beyond the title of our paper, and see a strong case for collections and collecting.

In summary, consideration of the arguments against the judicious use of photo-based descriptions shows them to be ill founded although well intentioned. We remain convinced that the ICZN should continue to allow taxonomists to use their discretion with regard to the material foundations for their new taxon descriptions. Type specimens are an expectation and a default, but if unusual circumstances dictate the recognition of a new species based on photographs of a lost type there is no good reason to prohibit this practice. And if new taxa are going to be recognized and published on the basis of photos of lost specimens, then they should be named according to the rules of nomenclature.

NB: The views expressed here by the junior author are his own and do not reflect those of the Commission or its Commissioners.

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